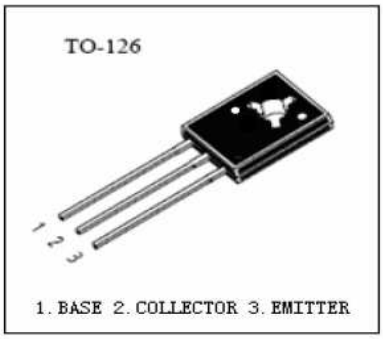
MICRO ELECTRONIC

13003

HIGH VOLTAGE POWER TRANSISTOR

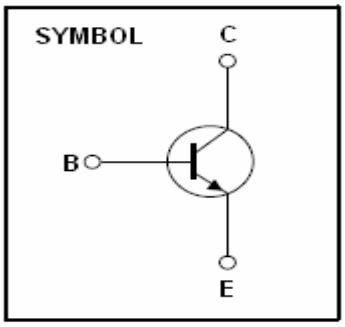


FEATURES: High Voltage Capability
High Speed Switching
Wide SOA

APPLICATIONS: Flourscent Lamp
Electronic Ballast
Electronic Transformer

LIMMITING VALUES(T_j=25℃ Unless OtherWise Stated)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	600	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	9	V
Collector Current	I_C	1.25	A
Total Power Dissipattion	P_C	20	W
Storage Temperature	T_{stg}	-65～150	℃
Junction Temperature	T_j	150	℃



ELECTRICAL CHARACTERISTICS (Tj=25℃ Unless Otherwise Stated)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=0.5mA,I_E=0	600		V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=10mA,I_B=0	400		V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=1mA,I_C=0	9		V
Collector-Base Cutoff Current	I_{CBO}	V_{cb}=550V, I_E=0		10	μA
Collector-Emitter Cutoff Current	I_{CEO}	V_{ce}=400V, I_B=0		20	μA
Emitter-Collector Cutoff Current	I_{EBO}	V_{eb}=9V, I_C=0		20	μA
DC Current Gain	hFE(1)	V_{ce}=5V,I_C=100mA	10	40	
DC Current Gain	hFE(2)	V_{ce}=5V,I_C=1mA	9		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=0.5A,I_B=0.1A		0.8	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=0.5A,I_B=0.1A		1.2	V
Storage Time	T_s	V_{CC}=250V		3	
Falling Time	T_f	I_C=5I_B		0.8	uS
		I_{B1}=- I_{B2}=0.2A			

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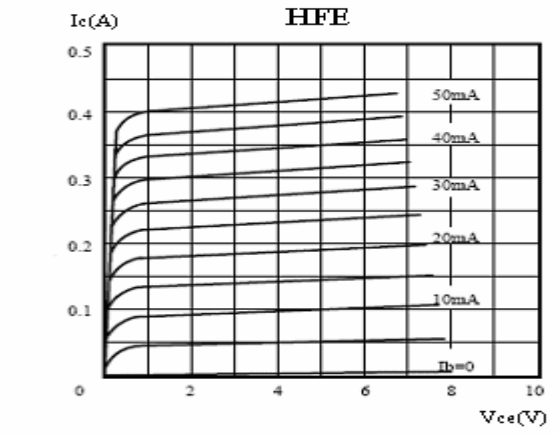
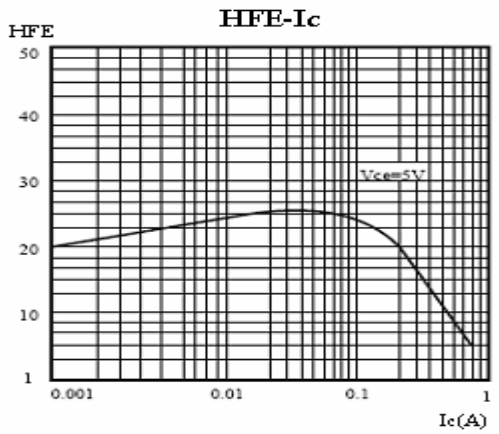
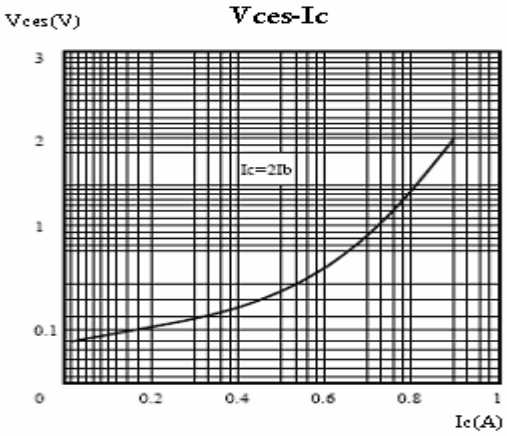
MICRO ELECTRONIC

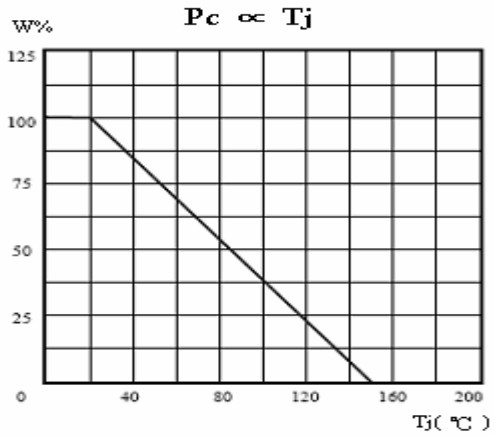
13003

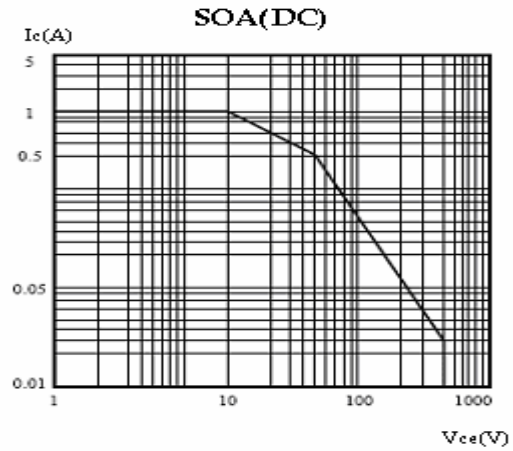
HIGH VOLTAGE POWER TRANSISTOR











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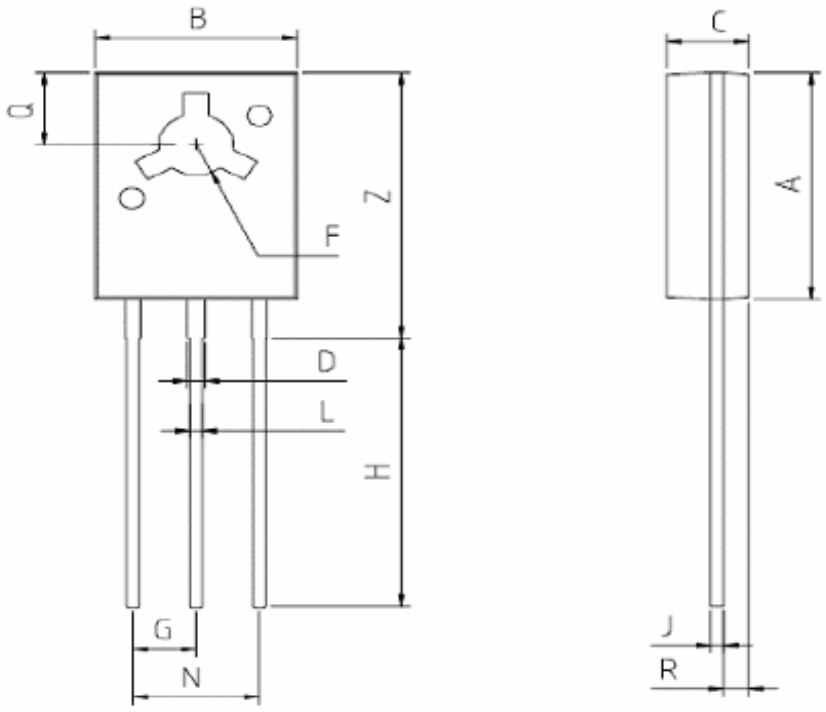
13003

HIGH VOLTAGE POWER TRANSISTOR

TO-126 MECHANICAL DATA

UNIT: mm



SYMBOL	Min	Nom	Max
A	9.0	10	11
B	7.05	8	8.05
C	2.4	2.5	2.8
D	1.4	1.5	1.6
F	3.15	φ3.2	3.25
G		2.3	
H		13	
J	0.48	0.5	0.55
K			
L	0.65	0.75	0.85
N		4.6	
P			
Q	3.8	3.9	4.0
R	0.9	1	1.1
S			
Z	13.5	14	14.5

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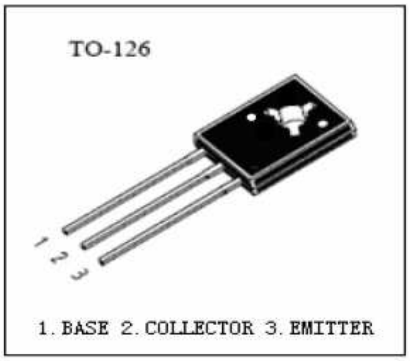
MICRO ELECTRONIC

13003A

HIGH VOLTAGE POWER TRANSISTOR

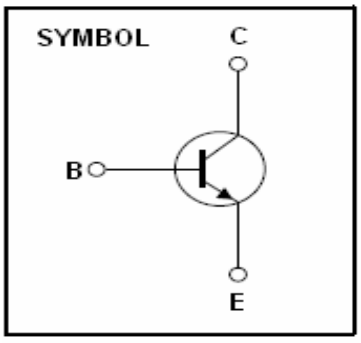


FEATURES: High Voltage Capability
High Speed Switching
Wide SOA

APPLICATIONS: Flourscent Lamp
Electronic Ballast
Electronic Transformer

LIMMITING VALUES(T_j=25℃ Unless OtherWise Stated)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	600	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	9	V
Collector Current	I_C	1.5	A
Total Power Dissipattion	P_C	25	W
Storage Temperature	T_{stg}	-65～150	℃
Junction Temperature	T_j	150	℃



ELECTRICAL CHARACTERISTICS (Tj=25℃ Unless Otherwise Stated)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=0.5mA,I_E=0	600		V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=10mA,I_B=0	400		V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=1mA,I_C=0	9		V
Collector-Base Cutoff Current	I_{CBO}	V_{cb}=550V, I_E=0		10	μA
Collector-Emitter Cutoff Current	I_{CEO}	V_{ce}=400V, I_B=0		20	μA
Emitter-Collector Cutoff Current	I_{EBO}	V_{eb}=9V, I_C=0		20	μA
DC Current Gain	hFE(1)	V_{ce}=5V,I_C=200mA	10	40	
DC Current Gain	hFE(2)	V_{ce}=5V,I_C=1mA	9		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=0.75A,I_B=0.25A		0.7	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=0.75A,I_B=0.25A		1.2	V
Storage Time	T_s	V_{CC}=250V		3	
Falling Time	T_f	I_C=5I_B		0.8	uS
		I_{B1}=- I_{B2}=0.2A			

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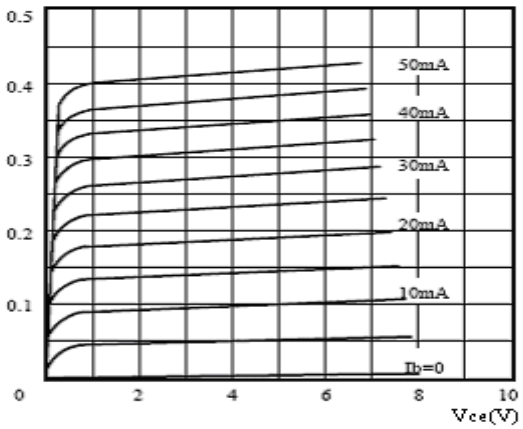
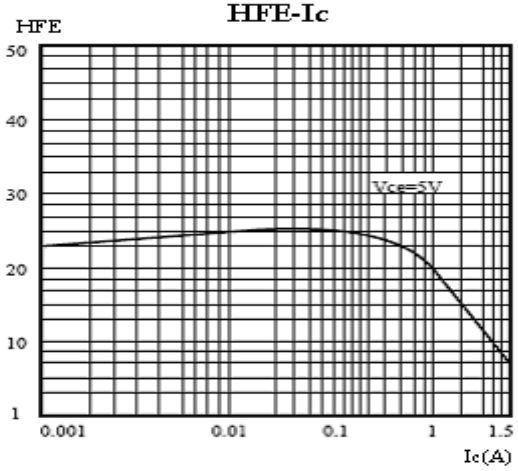
13003A

HIGH VOLTAGE POWER TRANSISTOR

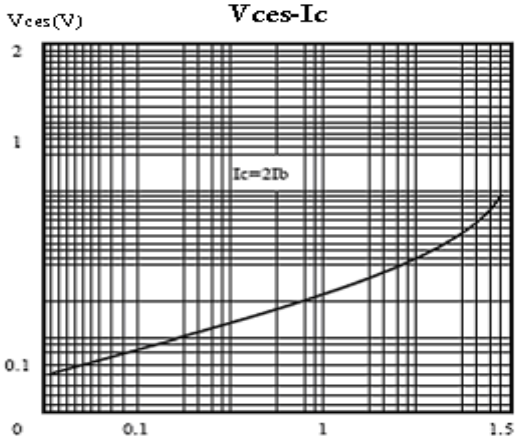
HFE



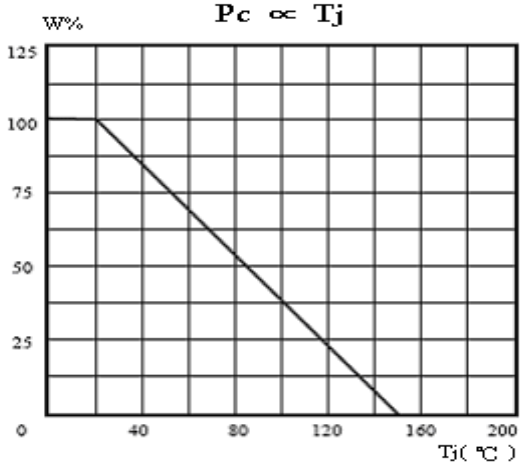
HFE-Ic



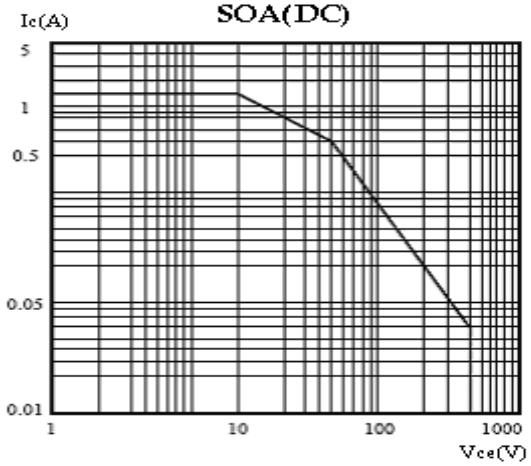
Vces-Ic



Pc ∝ Tj



SOA(DC)



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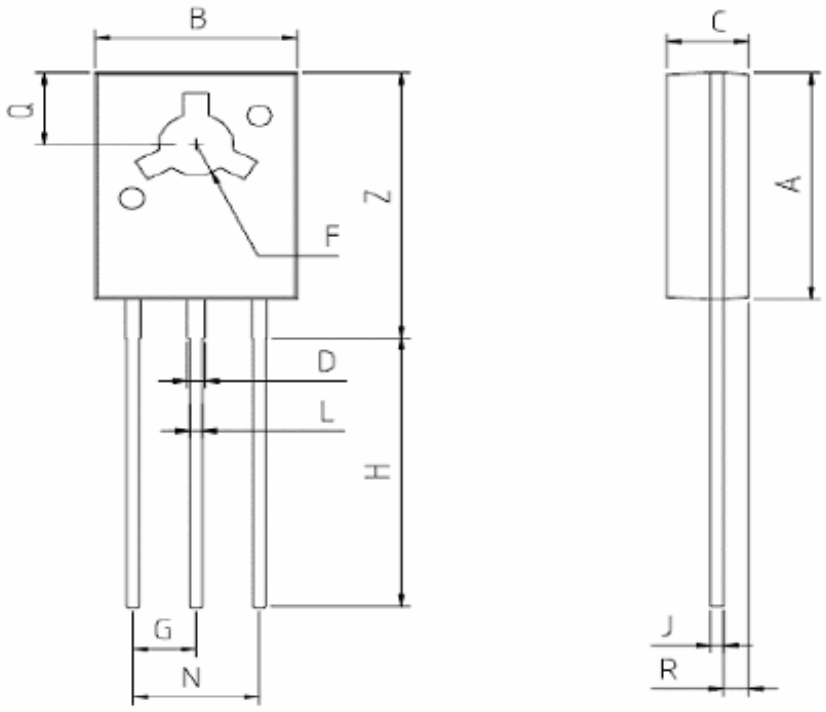
MICRO ELECTRONIC

13003A

HIGH VOLTAGE POWER TRANSISTOR

TO-126 MECHANICAL DATA

UNIT: mm



SYMBOL	Min	Nom	Max
A	9.0	10	11
B	7.05	8	8.05
C	2.4	2.5	2.8
D	1.4	1.5	1.6
F	3.15	φ3.2	3.25
G		2.3	
H		13	
J	0.48	0.5	0.55
K			
L	0.65	0.75	0.85
N		4.6	
P			
Q	3.8	3.9	4.0
R	0.9	1	1.1
S			
Z	13.5	14	14.5

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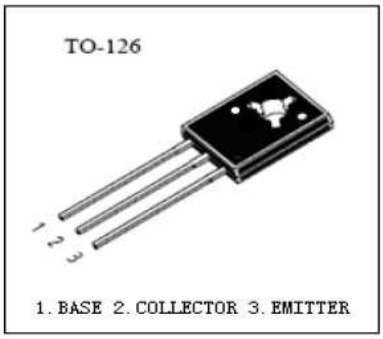
MICRO ELECTRONIC

13003B

HIGH VOLTAGE POWER TRANSISTOR

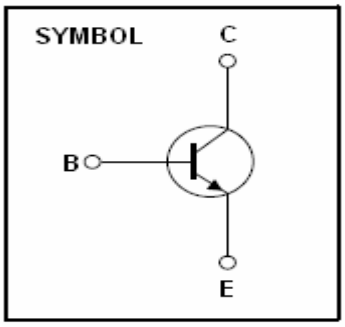


FEATURES: High Voltage Capability
High Speed Switching
Wide SOA

APPLICATIONS: Flourscent Lamp
Electronic Ballast
Electronic Transformer

LIMMITING VALUES(T_j=25℃ Unless OtherWise Stated)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	600	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	9	V
Collector Current	I_C	1.75	A
Total Power Dissipattion	P_C	30	W
Storage Temperature	T_{stg}	-65～150	℃
Junction Temperature	T_j	150	℃



ELECTRICAL CHARACTERISTICS (Tj=25℃ Unless Otherwise Stated)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=0.5mA,I_E=0	600		V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=10mA,I_B=0	400		V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=1mA,I_C=0	9		V
Collector-Base Cutoff Current	I_{CBO}	V_{cb}=550V, I_E=0		10	μA
Collector-Emitter Cutoff Current	I_{CEO}	V_{ce}=400V, I_B=0		20	μA
Emitter-Collector Cutoff Current	I_{EBO}	V_{eb}=9V, I_C=0		20	μA
DC Current Gain	hFE(1)	V_{ce}=5V,I_C=200mA	10	40	
DC Current Gain	hFE(2)	V_{ce}=5V,I_C=1mA	9		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=1.0A,I_B=0.5A		0.7	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=1.0A,I_B=0.5A		1.2	V
Storage Time	T_s	V_{CC}=250V		3	
Falling Time	T_f	I_C=5I_B		0.8	uS
		I_{B1}=- I_{B2}=0.2A			

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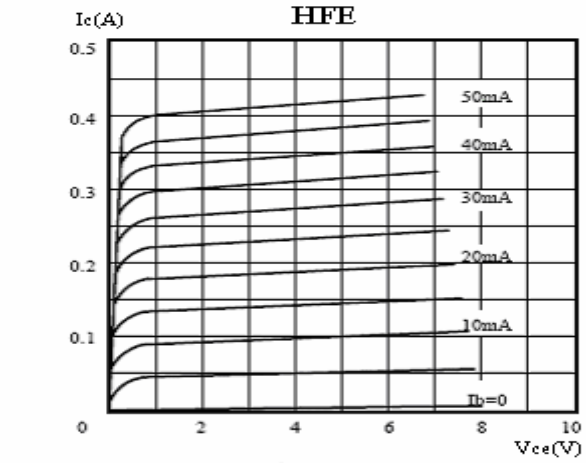
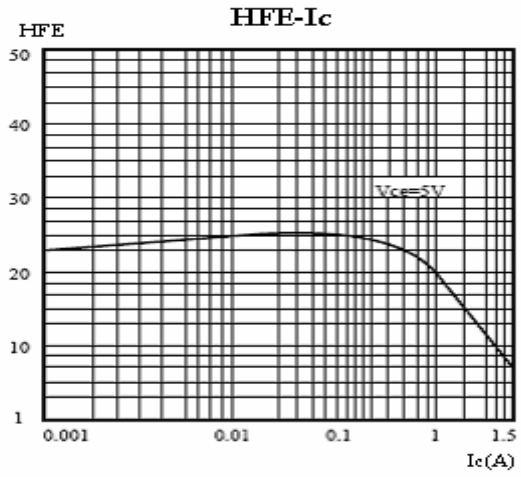
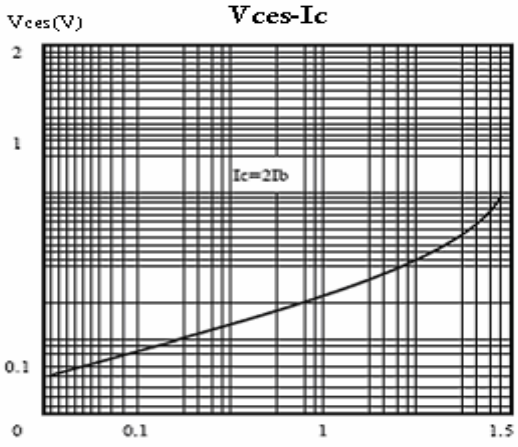
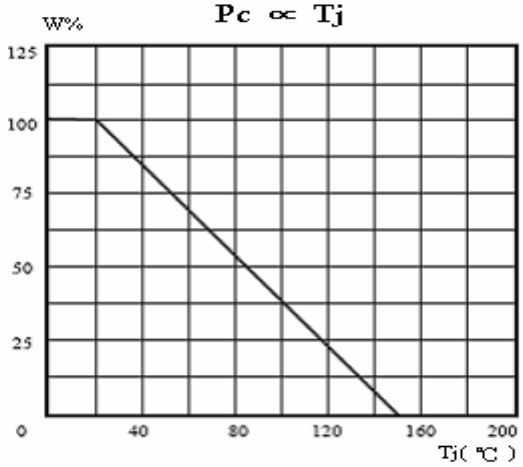
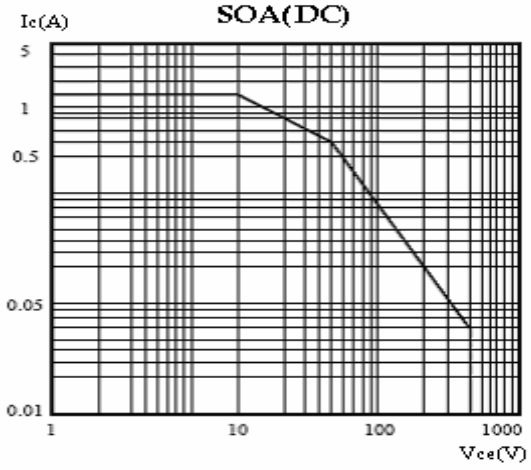

HFE
Ic(A)
0.5
0.4
0.3
0.2
0.1
0
2
4
6
8
10
Vce(V)
50mA
40mA
30mA
20mA
10mA
Ib=0


HFE-Ic
HFE
50
40
30
20
10
1
0.001
0.01
0.1
1
1.5
Ic(A)
Vce=5V


Vces-Ic
Vces(V)
2
1
0.1
0
0.1
1
1.5
Ic=2Ib


Pc ∝ Tj
W%
125
100
75
50
25
0
40
80
120
160
200
Tj(℃)


SOA(DC)
Ic(A)
5
1
0.5
0.05
0.01
1
10
100
1000
Vce(V)

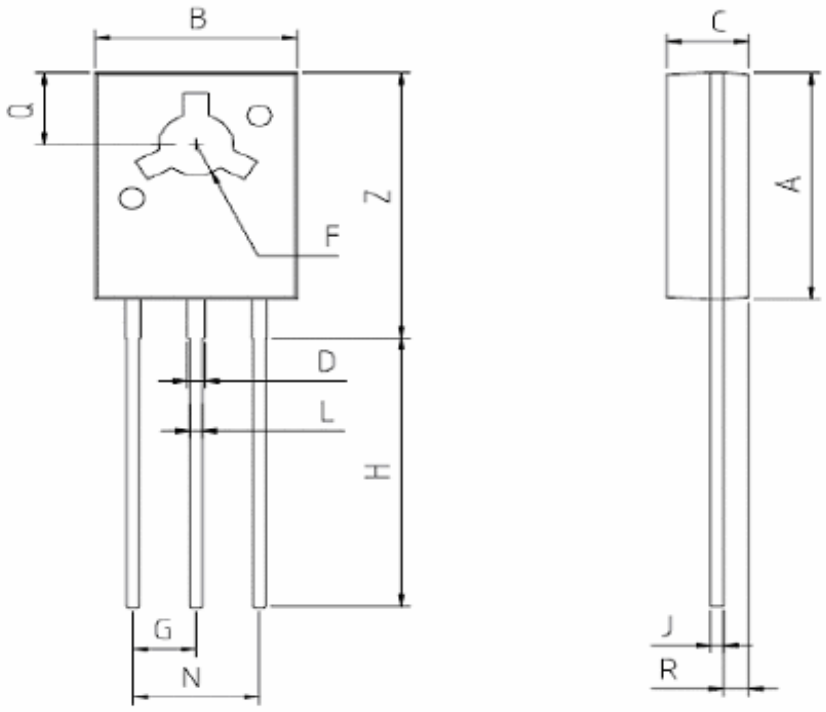
MICRO ELECTRONIC

13003B

HIGH VOLTAGE POWER TRANSISTOR

TO-126 MECHANICAL DATA

UNIT: mm



SYMBOL	Min	Nom	Max
A	9.0	10	11
B	7.05	8	8.05
C	2.4	2.5	2.8
D	1.4	1.5	1.6
F	3.15	φ3.2	3.25
G		2.3	
H		13	
J	0.48	0.5	0.55
K			
L	0.65	0.75	0.85
N		4.6	
P			
Q	3.8	3.9	4.0
R	0.9	1	1.1
S			
Z	13.5	14	14.5

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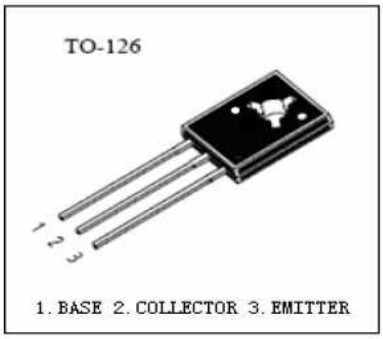
MICRO ELECTRONIC

13003C

HIGH VOLTAGE POWER TRANSISTOR

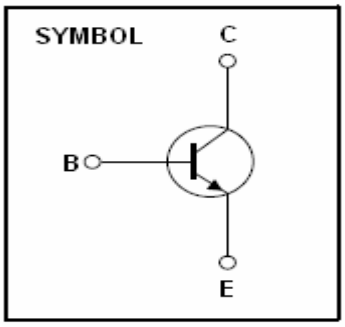


FEATURES: High Voltage Capability
High Speed Switching
Wide SOA

APPLICATIONS: Flourscent Lamp
Electronic Ballast
Electronic Transformer

LIMMITING VALUES(T_j=25℃ Unless OtherWise Stated)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	700	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	9	V
Collector Current	I_C	2.0	A
Total Power Dissipattion	P_C	35	W
Storage Temperature	T_{stg}	-65～150	℃
Junction Temperature	T_j	150	℃



ELECTRICAL CHARACTERISTICS (Tj=25℃ Unless Otherwise Stated)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=0.5mA,I_E=0	700		V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=10mA,I_B=0	400		V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=1mA,I_C=0	9		V
Collector-Base Cutoff Current	I_{CBO}	V_{cb}=650V, I_E=0		10	μA
Collector-Emitter Cutoff Current	I_{CEO}	V_{ce}=400V, I_B=0		20	μA
Emitter-Collector Cutoff Current	I_{EBO}	V_{eb}=9V, I_C=0		20	μA
DC Current Gain	hFE(1)	V_{ce}=5V,I_C=200mA	10	40	
DC Current Gain	hFE(2)	V_{ce}=5V,I_C=1mA	9		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=1.5A,I_B=0.5A		0.8	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=1.5A,I_B=0.5A		1.2	V
Storage Time	T_s	V_{CC}=250V		3	
Falling Time	T_f	I_C=5I_B		0.8	uS
		I_{B1}=- I_{B2}=0.2A			

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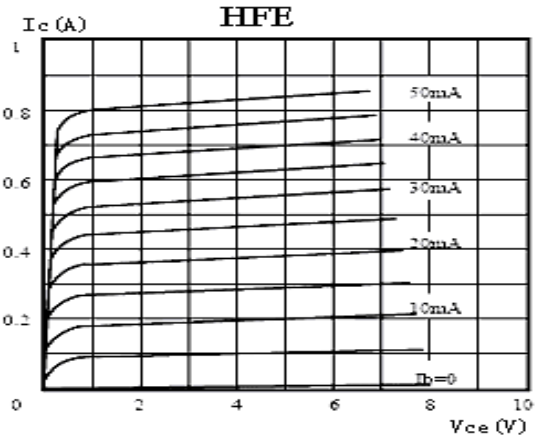
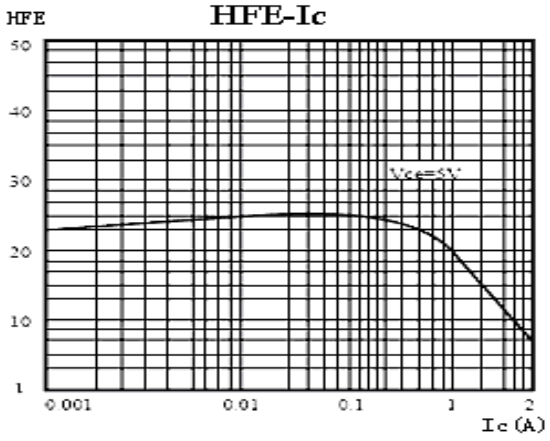
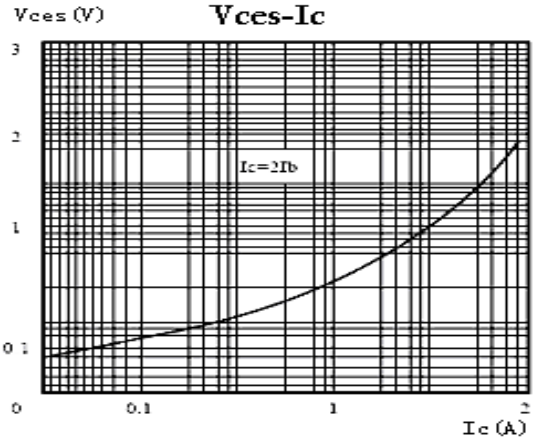
MICRO ELECTRONIC

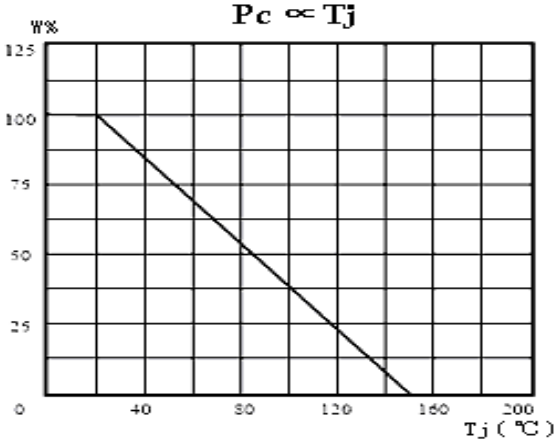
13003C

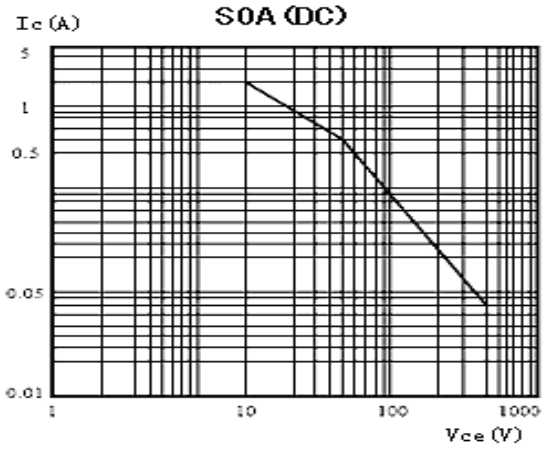
HIGH VOLTAGE POWER TRANSISTOR











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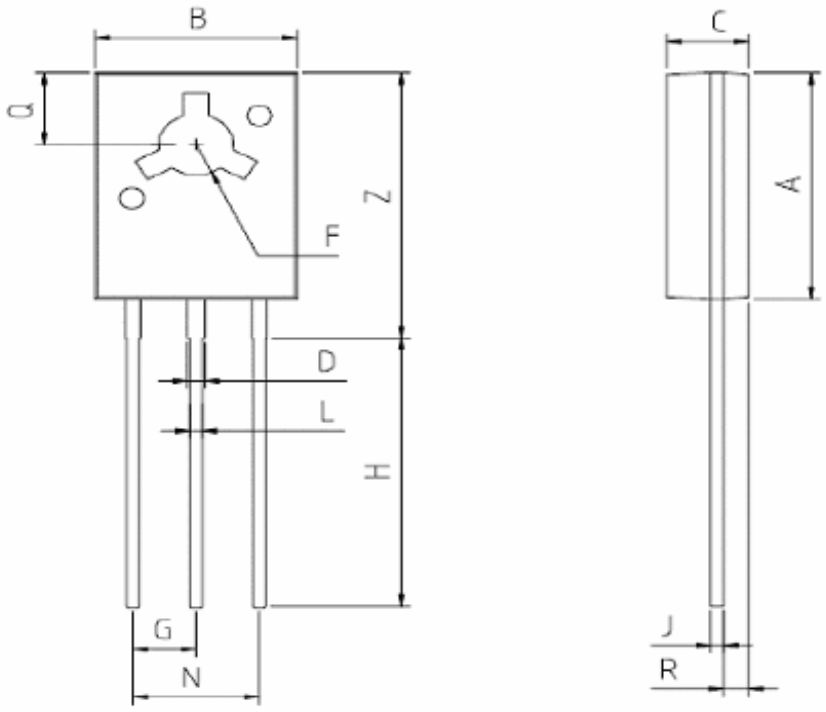
MICRO ELECTRONIC

13003C

HIGH VOLTAGE POWER TRANSISTOR

TO-126 MECHANICAL DATA

UNIT: mm



SYMBOL	Min	Nom	Max
A	9.0	10	11
B	7.05	8	8.05
C	2.4	2.5	2.8
D	1.4	1.5	1.6
F	3.15	φ3.2	3.25
G		2.3	
H		13	
J	0.48	0.5	0.55
K			
L	0.65	0.75	0.85
N		4.6	
P			
Q	3.8	3.9	4.0
R	0.9	1	1.1
S			
Z	13.5	14	14.5

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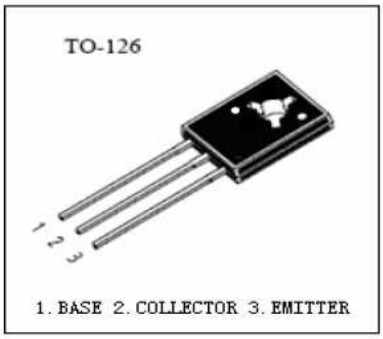
MICRO ELECTRONIC

13003D

HIGH VOLTAGE POWER TRANSISTOR

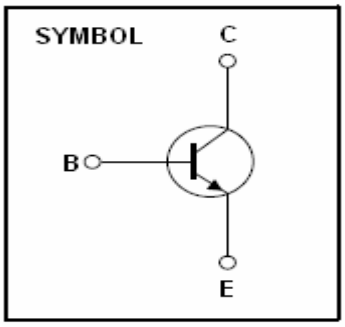


FEATURES: High Voltage Capability
High Speed Switching
Wide SOA

APPLICATIONS: Flourscent Lamp
Electronic Ballast
Electronic Transformer

LIMMITING VALUES(T_j=25℃ Unless OtherWise Stated)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	700	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	9	V
Collector Current	I_C	2.25	A
Total Power Dissipattion	P_C	40	W
Storage Temperature	T_{stg}	-65～150	℃
Junction Temperature	T_j	150	℃



ELECTRICAL CHARACTERISTICS (Tj=25℃ Unless Otherwise Stated)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=0.5mA,I_E=0	700		V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=10mA,I_B=0	400		V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=1mA,I_C=0	9		V
Collector-Base Cutoff Current	I_{CBO}	V_{cb}=650V, I_E=0		10	μA
Collector-Emitter Cutoff Current	I_{CEO}	V_{ce}=400V, I_B=0		20	μA
Emitter-Collector Cutoff Current	I_{EBO}	V_{eb}=9V, I_C=0		20	μA
DC Current Gain	hFE(1)	V_{ce}=5V,I_C=500mA	10	40	
DC Current Gain	hFE(2)	V_{ce}=5V,I_C=1mA	9		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=1.5A,I_B=0.5A		1.0	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=1.5A,I_B=0.5A		1.2	V
Storage Time	T_s	V_{CC}=250V		4	
Falling Time	T_f	I_C=5I_B		0.8	uS
		I_{B1}=- I_{B2}=0.2A			

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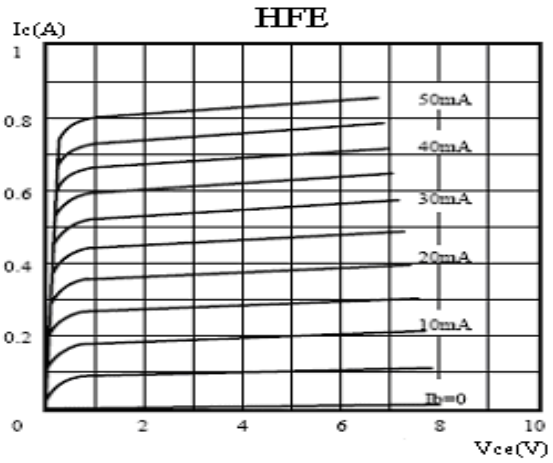
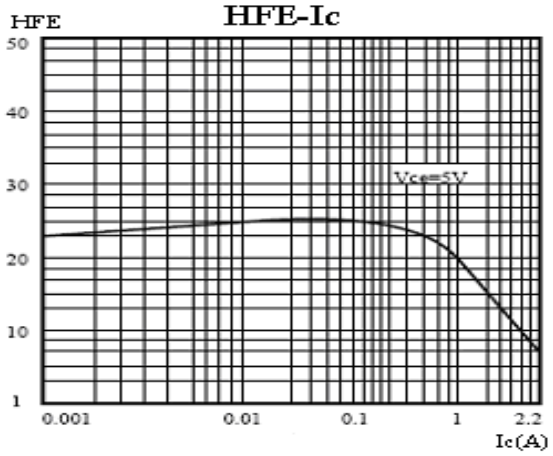
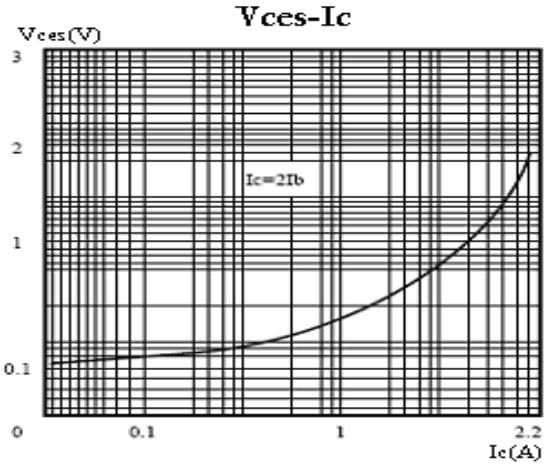
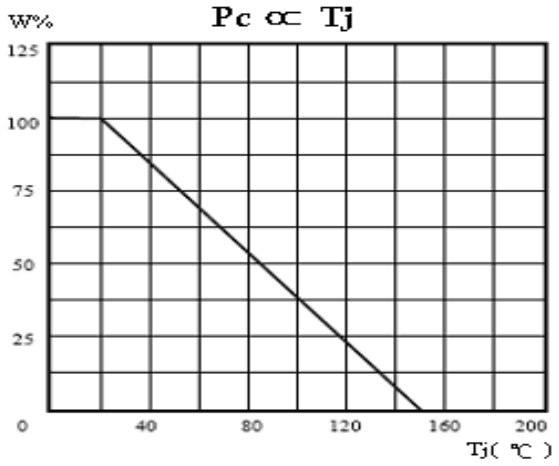
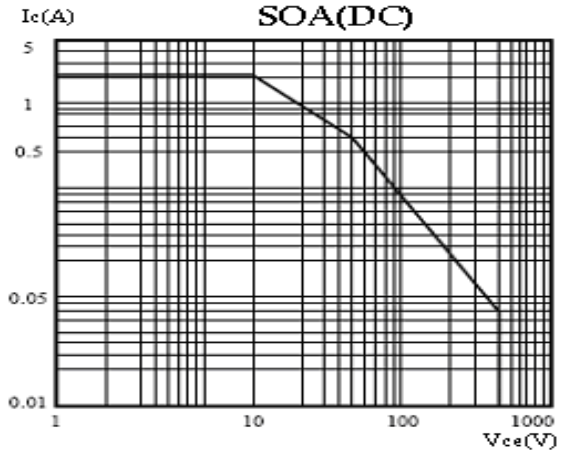

HFE
Ic(A)
1
0.8
0.6
0.4
0.2
0
2
4
6
8
10
Vce(V)
50mA
40mA
30mA
20mA
10mA
Ib=0


HFE-Ic
HFE
50
40
30
20
10
1
0.001
0.01
0.1
1
2.2
Ic(A)
Vce=5V


Vces-Ic
Vces(V)
3
2
1
0.1
0
0.1
1
2.2
Ic(A)
Ic=2Ib


Pc ∝ Tj
W%
125
100
75
50
25
0
40
80
120
160
200
Tj(℃)


SOA(DC)
Ic(A)
5
1
0.5
0.05
0.01
1
10
100
1000
Vce(V)

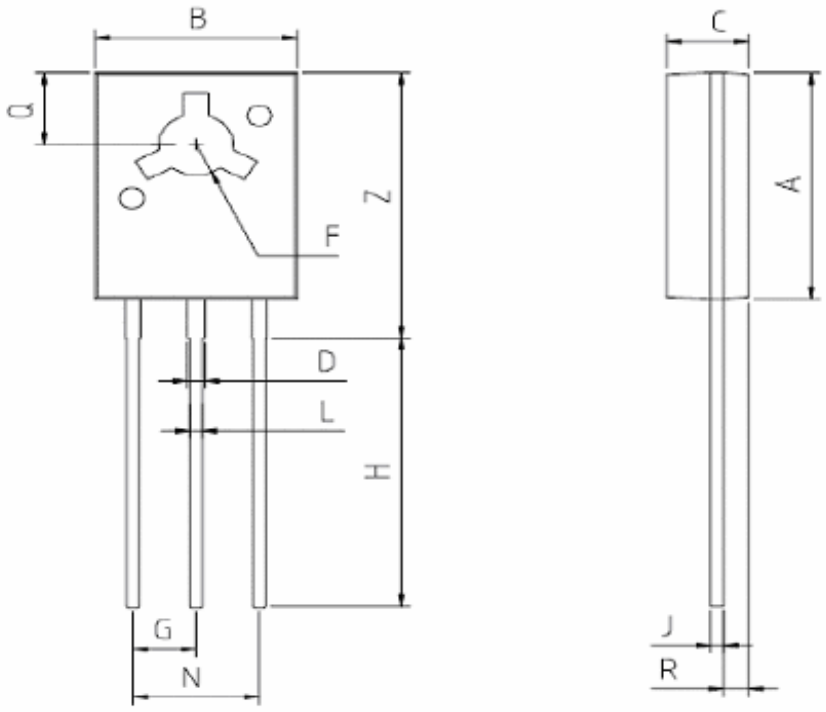
MICRO ELECTRONIC

13003D

HIGH VOLTAGE POWER TRANSISTOR

TO-126 MECHANICAL DATA

UNIT: mm



SYMBOL	Min	Nom	Max
A	9.0	10	11
B	7.05	8	8.05
C	2.4	2.5	2.8
D	1.4	1.5	1.6
F	3.15	φ3.2	3.25
G		2.3	
H		13	
J	0.48	0.5	0.55
K			
L	0.65	0.75	0.85
N		4.6	
P			
Q	3.8	3.9	4.0
R	0.9	1	1.1
S			
Z	13.5	14	14.5

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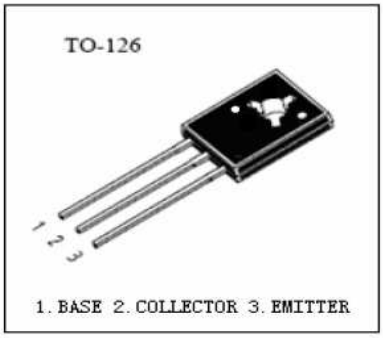
MICRO ELECTRONIC

13003E

HIGH VOLTAGE POWER TRANSISTOR

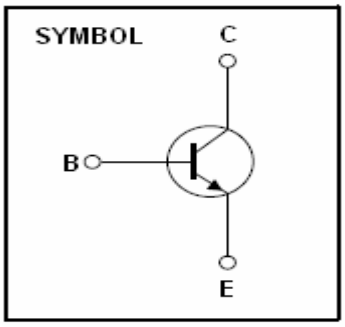


FEATURES: High Voltage Capability
High Speed Switching
Wide SOA

APPLICATIONS: Flourscent Lamp
Electronic Ballast
Electronic Transformer

LIMMITING VALUES(T_j=25℃ Unless OtherWise Stated)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	700	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	9	V
Collector Current	I_C	2.5	A
Total Power Dissipattion	P_C	45	W
Storage Temperature	T_{stg}	-65～150	℃
Junction Temperature	T_j	150	℃



ELECTRICAL CHARACTERISTICS (Tj=25℃ Unless Otherwise Stated)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=0.5mA,I_E=0	700		V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=10mA,I_B=0	400		V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=1mA,I_C=0	9		V
Collector-Base Cutoff Current	I_{CBO}	V_{CB}=650V, I_E=0		10	μA
Collector-Emitter Cutoff Current	I_{CEO}	V_{CE}=400V, I_B=0		20	μA
Emitter-Collector Cutoff Current	I_{EBO}	V_{EB}=9V, I_C=0		20	μA
DC Current Gain	hFE(1)	V_{CE}=5V,I_C=500mA	10	40	
DC Current Gain	hFE(2)	V_{CE}=5V,I_C=1mA	9		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=1.5A,I_B=0.5A		1.0	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=1.5A,I_B=0.5A		1.2	V
Storage Time	T_s	V_{CC}=250V		4	
Falling Time	T_f	I_C=5I_B		0.8	uS
		I_{B1}=- I_{B2}=0.2A			

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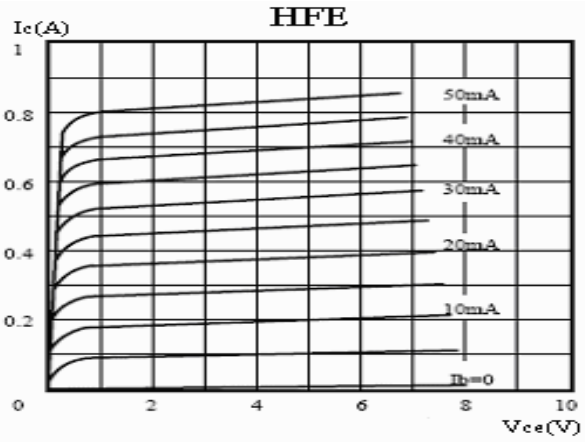
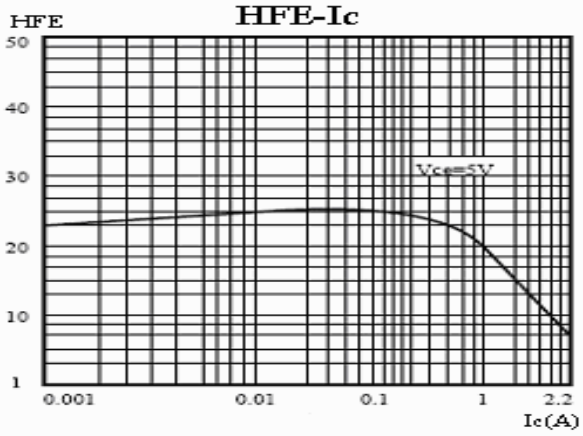
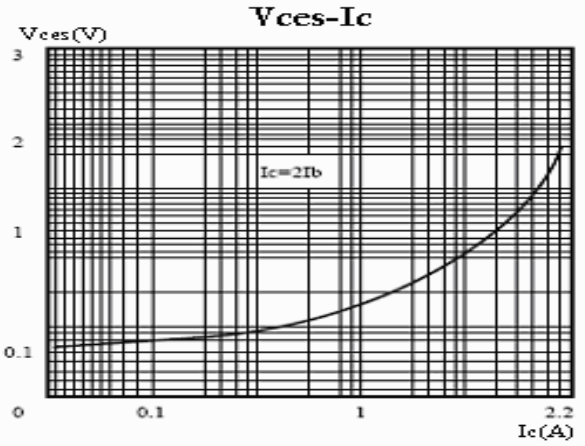
MICRO ELECTRONIC

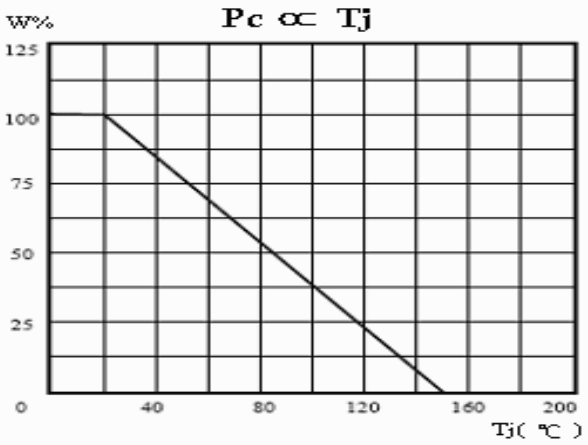
13003E

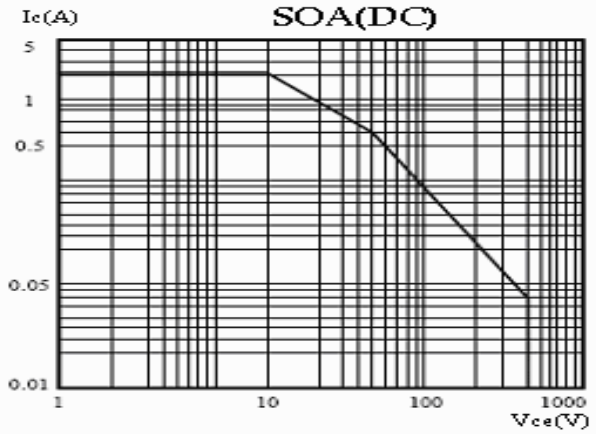
HIGH VOLTAGE POWER TRANSISTOR











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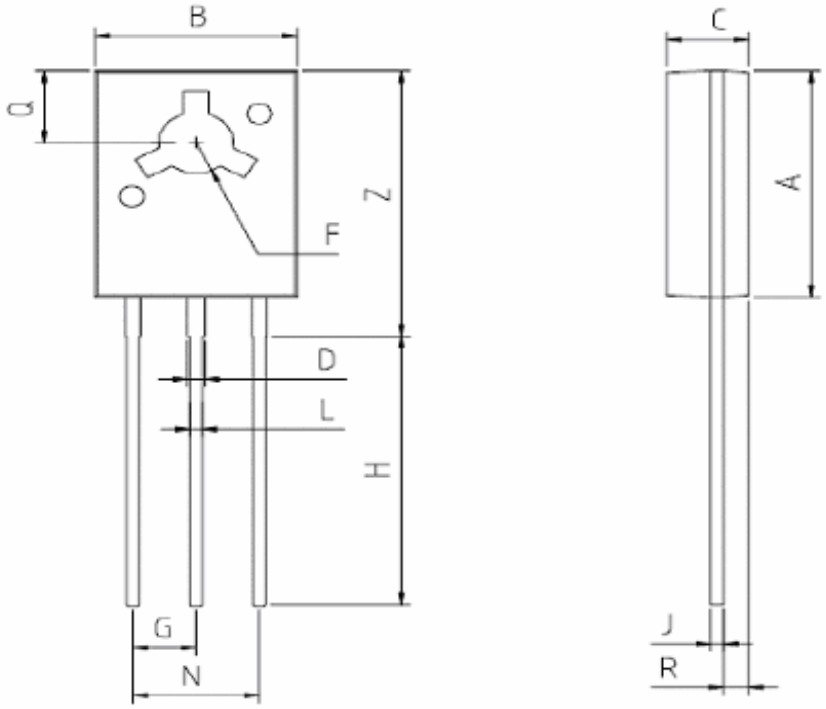
MICRO ELECTRONIC

13003E

HIGH VOLTAGE POWER TRANSISTOR

TO-126 MECHANICAL DATA

UNIT: mm



SYMBOL	Min	Nom	Max
A	9.0	10	11
B	7.05	8	8.05
C	2.4	2.5	2.8
D	1.4	1.5	1.6
F	3.15	φ3.2	3.25
G		2.3	
H		13	
J	0.48	0.5	0.55
K			
L	0.65	0.75	0.85
N		4.6	
P			
Q	3.8	3.9	4.0
R	0.9	1	1.1
S			
Z	13.5	14	14.5

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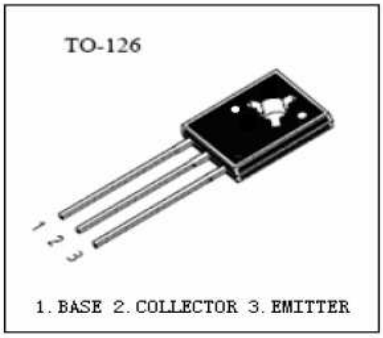
MICRO ELECTRONIC

13003F

HIGH VOLTAGE POWER TRANSISTOR

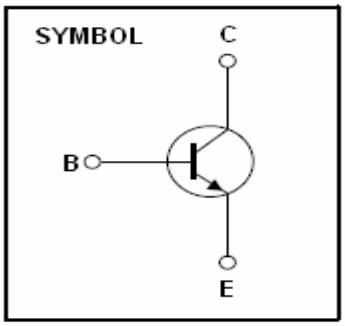
FEATURES: High Voltage Capability
High Speed Switching
Wide SOA

APPLICATIONS: Flourscent Lamp
Electronic Ballast
Electronic Transformer



LIMMITING VALUES(T_j=25℃ Unless OtherWise Stated)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	700	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	9	V
Collector Current	I_C	3.0	A
Total Power Dissipattion	P_C	50	W
Storage Temperature	T_{stg}	-65～150	℃
Junction Temperature	T_j	150	℃



ELECTRICAL CHARACTERISTICS (Tj=25℃ Unless Otherwise Stated)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=0.5mA,I_E=0	700		V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=10mA,I_B=0	400		V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=1mA,I_C=0	9		V
Collector-Base Cutoff Current	I_{CBO}	V_{CB}=650V, I_E=0		10	μA
Collector-Emitter Cutoff Current	I_{CEO}	V_{CE}=400V, I_B=0		20	μA
Emitter-Collector Cutoff Current	I_{EBO}	V_{EB}=9V, I_C=0		20	μA
DC Current Gain	hFE(1)	V_{CE}=5V,I_C=1A	10	40	
DC Current Gain	hFE(2)	V_{CE}=5V,I_C=1mA	9		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=2A,I_B=0.5A		1.2	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=2A,I_B=0.5A		1.5	V
Storage Time	T_s	V_{CC}=250V		4	
Falling Time	T_f	I_C=5I_B		0.8	uS
		I_{B1}=- I_{B2}=0.2A			

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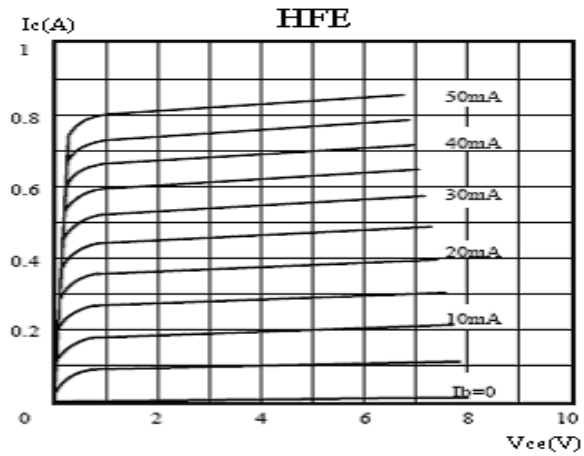
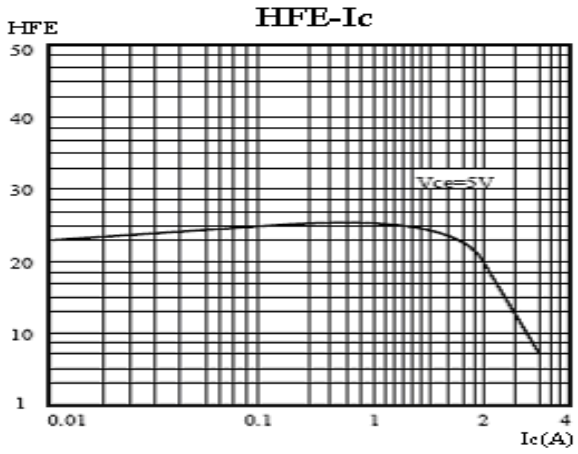
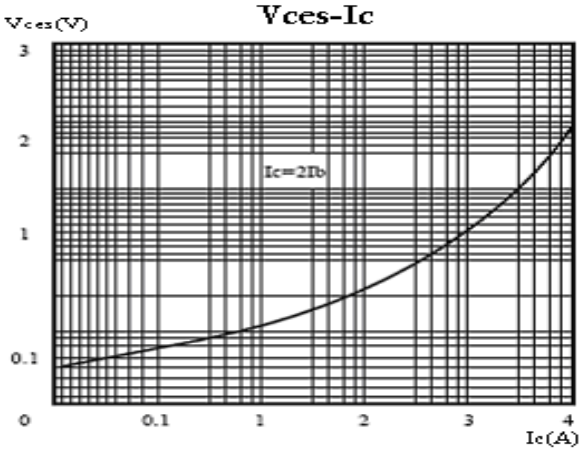
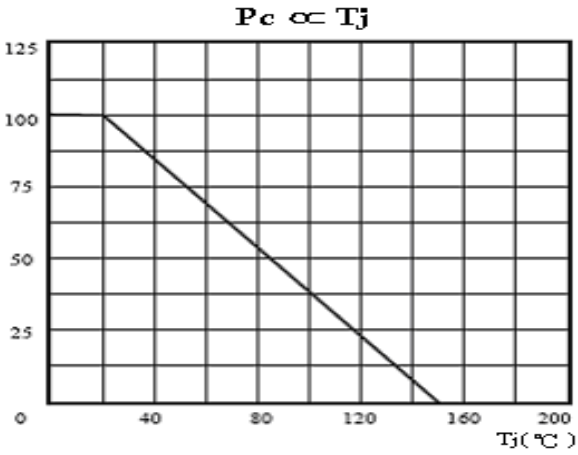
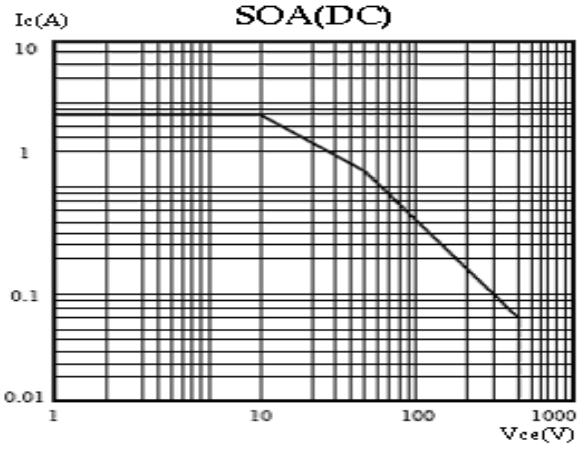

HFE
Ic(A)
1
0.8
0.6
0.4
0.2
0
2
4
6
8
10
Vce(V)
50mA
40mA
30mA
20mA
10mA
Ib=0


HFE-Ic
HFE
50
40
30
20
10
1
0.01
0.1
1
2
4
Ic(A)
Vce=5V


Vces-Ic
Vces(V)
3
2
1
0.1
0
0.1
1
2
3
4
Ic(A)
Ic=2Ib


Pc ∝ Tj
125
100
75
50
25
0
40
80
120
160
200
Tj(℃)


SOA(DC)
Ic(A)
10
1
0.1
0.01
1
10
100
1000
Vce(V)

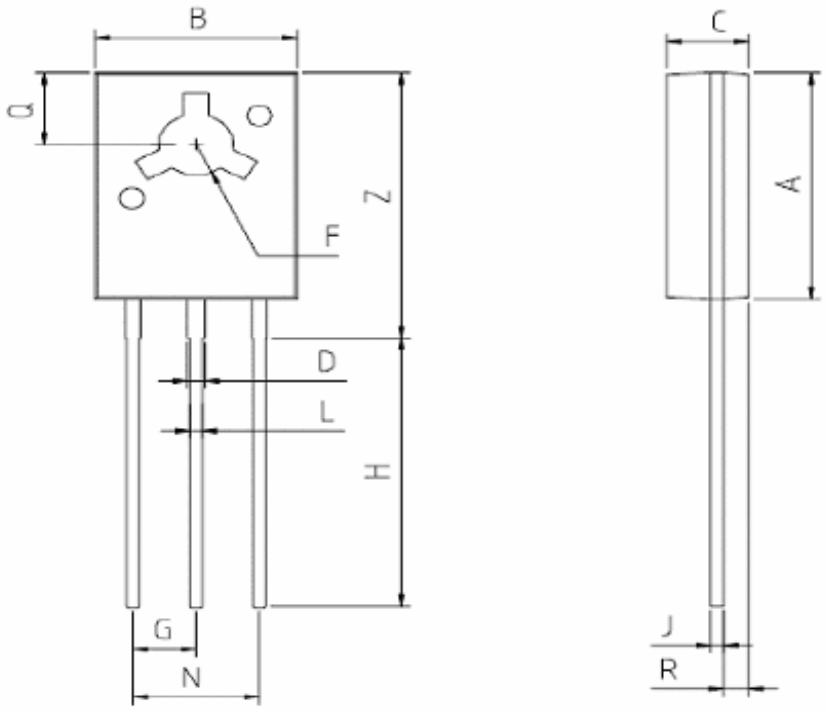
MICRO ELECTRONIC

13003F

HIGH VOLTAGE POWER TRANSISTOR

TO-126 MECHANICAL DATA

UNIT: mm



SYMBOL	Min	Nom	Max
A	9.0	10	11
B	7.05	8	8.05
C	2.4	2.5	2.8
D	1.4	1.5	1.6
F	3.15	φ3.2	3.25
G		2.3	
H		13	
J	0.48	0.5	0.55
K			
L	0.65	0.75	0.85
N		4.6	
P			
Q	3.8	3.9	4.0
R	0.9	1	1.1
S			
Z	13.5	14	14.5

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