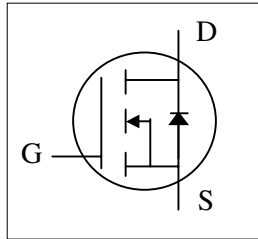




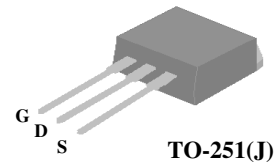
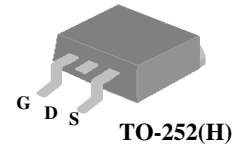
- ▼ Simple Drive Requirement
- ▼ Low On-resistance
- ▼ Fast Switching Characteristic



BV_{DSS}	25V
$R_{DS(ON)}$	6m Ω
I_D	75A

Description

The TO-252 package is widely preferred for commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters. The through-hole version (AP86T02GJ) is available for low-profile applications.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	25	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^3$	75	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V$	62	A
I_{DM}	Pulsed Drain Current ¹	300	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	75	W
	Linear Derating Factor	0.5	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Units
R_{thj-c}	Maximum Thermal Resistance, Junction-case	2	$^\circ\text{C}/\text{W}$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient	110	$^\circ\text{C}/\text{W}$

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	25	-	-	V
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =1mA	-	0.02	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =45A	-	-	6	mΩ
		V _{GS} =4.5V, I _D =30A	-	-	10	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =30A	-	42	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =25V, V _{GS} =0V	-	-	1	uA
	Drain-Source Leakage Current (T _j =175°C)	V _{DS} =20V, V _{GS} =0V	-	-	250	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =30A	-	23	37	nC
Q _{gs}	Gate-Source Charge	V _{DS} =20V	-	5		nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	14		nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =10V	-	11	-	ns
t _r	Rise Time	I _D =30A	-	105	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =10V	-	32	-	ns
t _f	Fall Time	R _D =0.3Ω	-	8	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	1830	2930	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	490	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	360	-	pF
R _g	Gate Resistance	f=1.0MHz	-	1.1	1.6	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =45A, V _{GS} =0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _S =20A, V _{GS} =0V,	-	28	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	15	-	nC

Drain-Source Avalanche Ratings

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
E _{AS}	Drain-Source Avalanche Energy ⁴	I _D =24A, V _{DD} =20V, L=100uH	-	-	29	mJ

Notes:

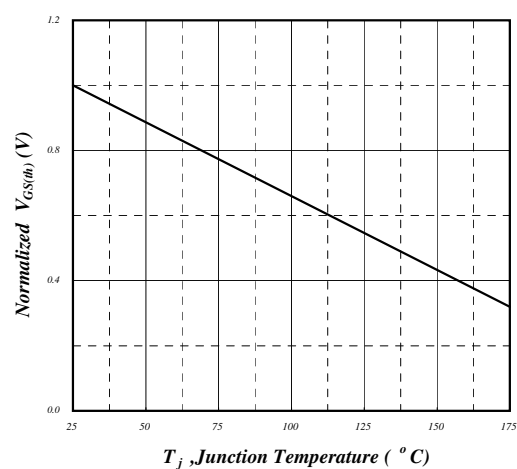
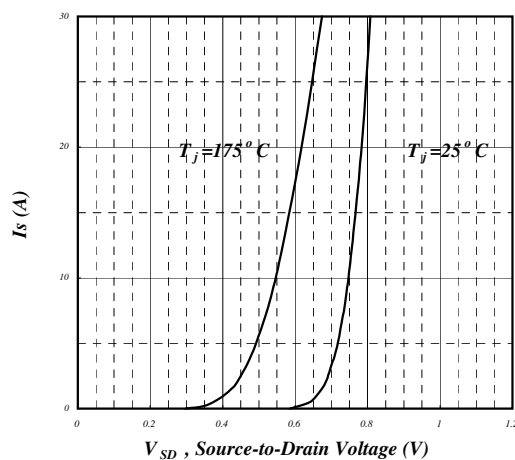
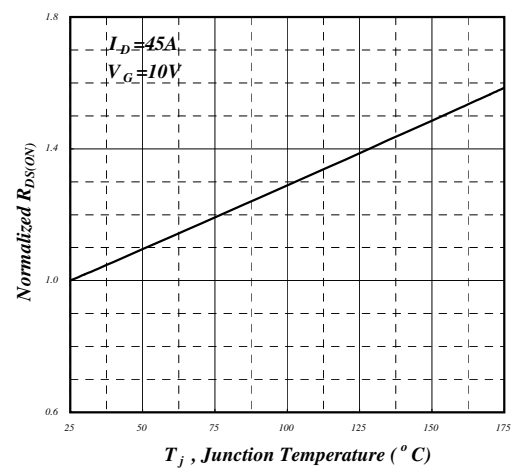
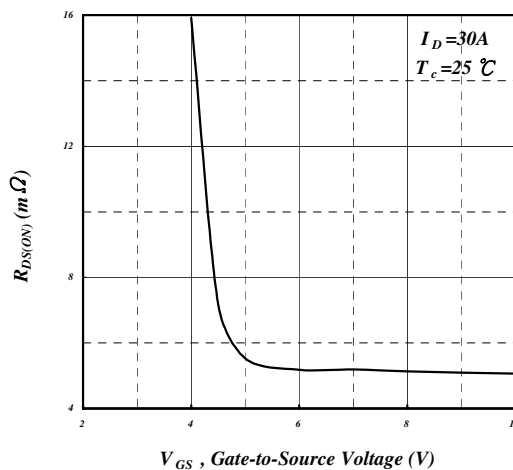
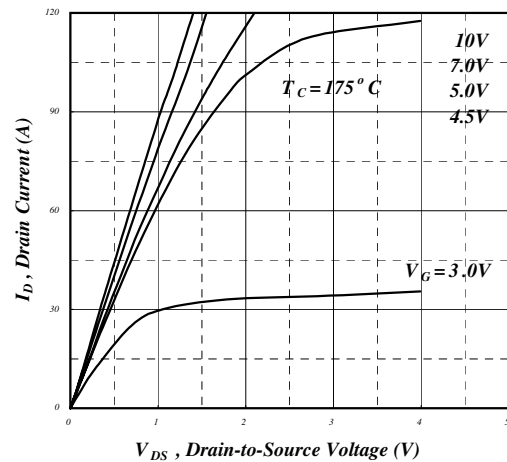
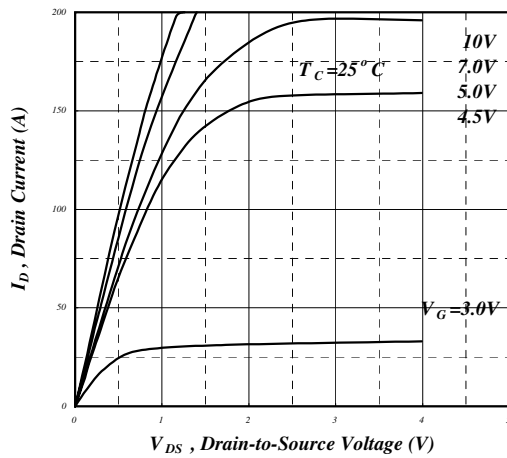
- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Package limitation current is 75A .
- 4.Single Pulse Test.

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

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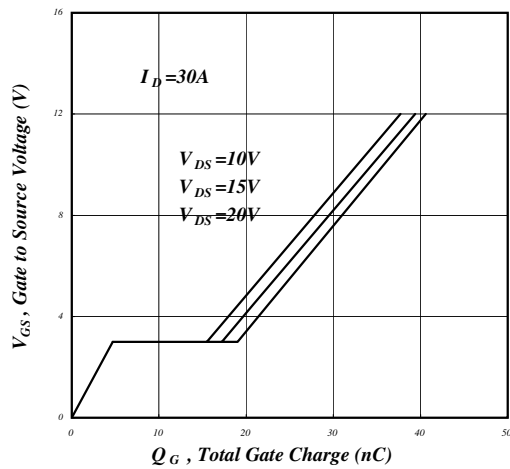


Fig 7. Gate Charge Characteristics

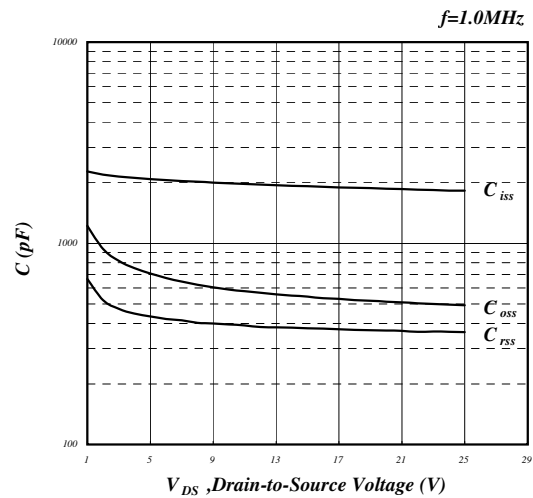


Fig 8. Typical Capacitance Characteristics

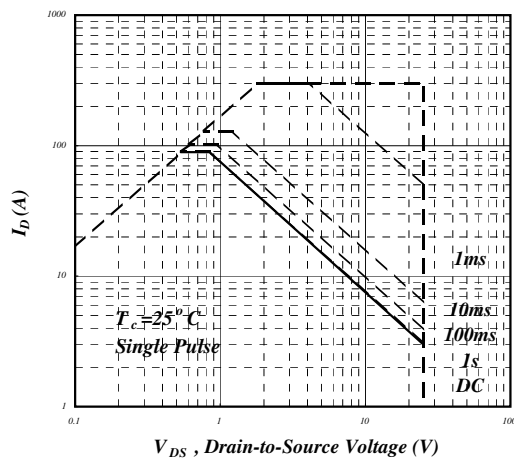


Fig 9. Maximum Safe Operating Area

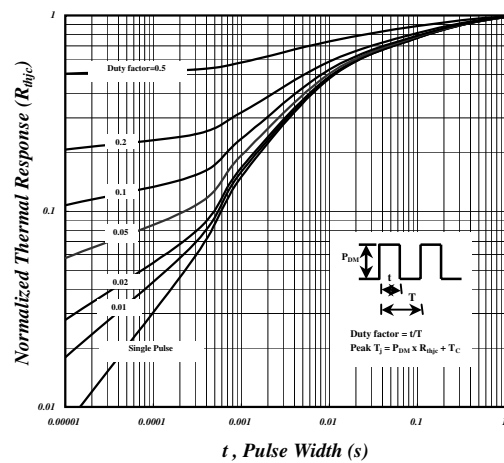


Fig 10. Effective Transient Thermal Impedance

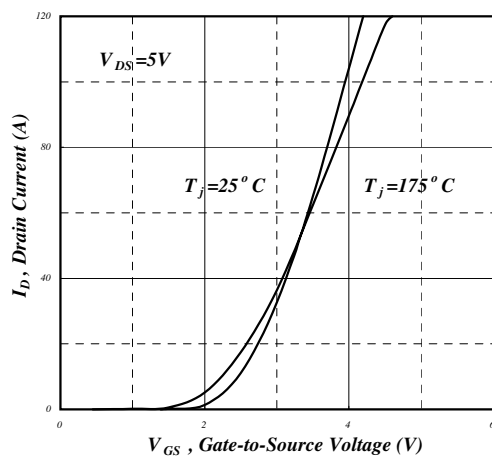


Fig 11. Transfer Characteristics

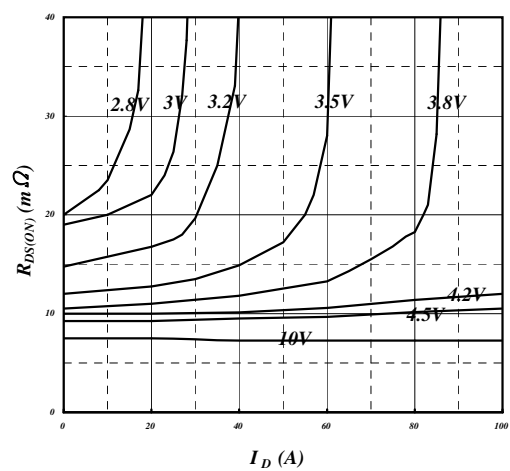
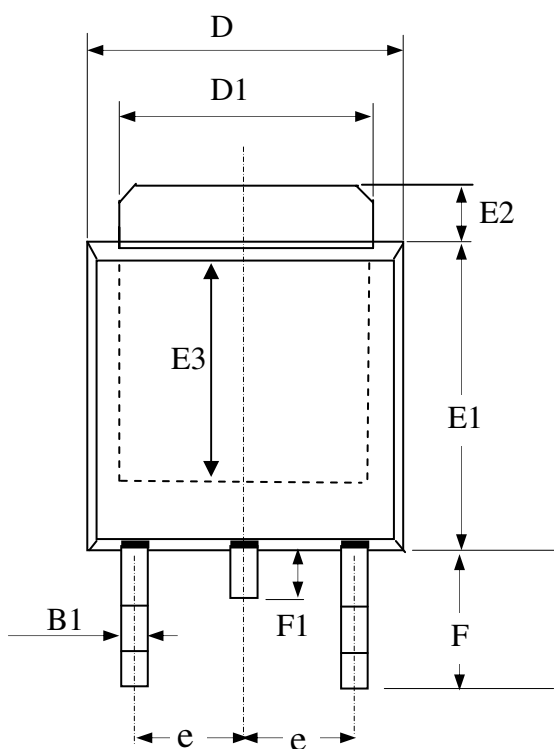


Fig 12. Drain-Source On Resistance



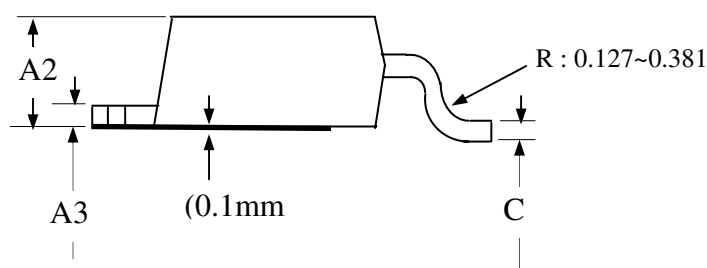
Package Outline : TO-252



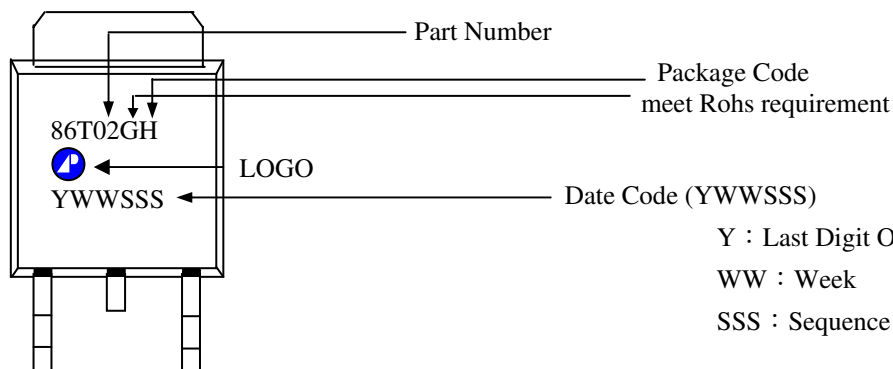
SYMBOLS	Millimeters		
	MIN	NOM	MAX
A2	1.80	2.30	2.80
A3	0.40	0.50	0.60
B1	0.40	0.70	1.00
D	6.00	6.50	7.00
D1	4.80	5.35	5.90
E3	3.50	4.00	4.50
F	2.20	2.63	3.05
F1	0.5	0.85	1.20
E1	5.10	5.70	6.30
E2	0.50	1.10	1.80
e	--	2.30	--
C	0.35	0.50	0.65

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.



Part Marking Information & Packing : TO-252



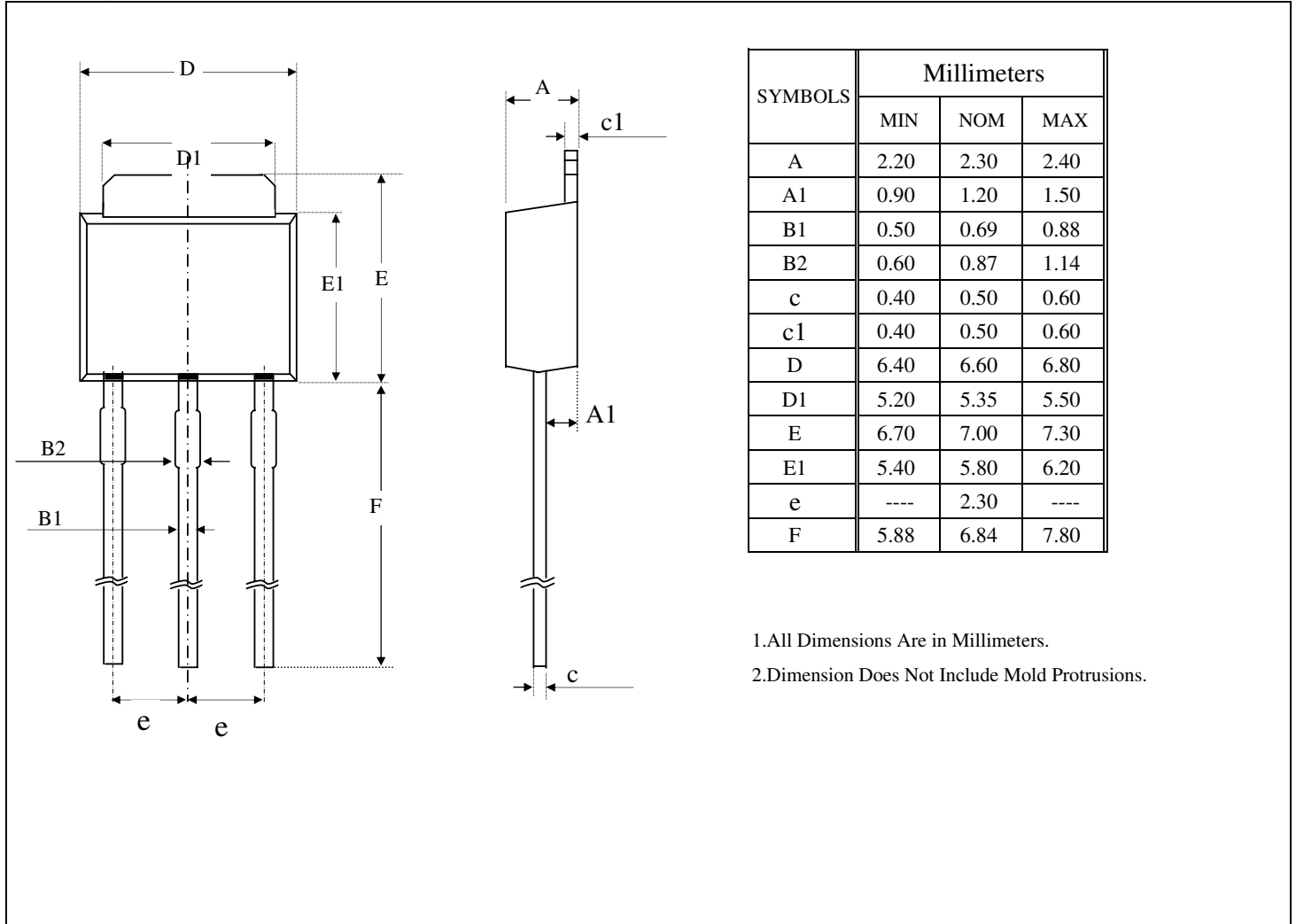
Y : Last Digit Of The Year

WW : Week

SSS : Sequence



Package Outline : TO-251



Part Marking Information & Packing : TO-251

