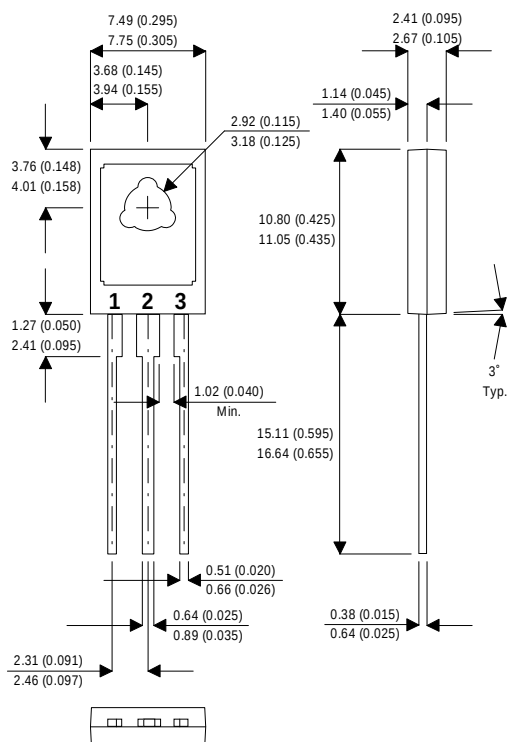


MECHANICAL DATA

Dimensions in mm (inches)

SILICON NPN EPITAXIAL PLANAR POWER TRANSISTOR



TO 126 Package

Pin 1 – Base Pin 2 – Collector Pin 3 – Emitter

ABSOLUTE MAXIMUM RATINGS

($T_{case} = 25^{\circ}C$ unless otherwise stated)

		SMX35	SMX36	SMX37
V_{CBO}	Collector – Base Voltage (Open Emitter)	100V	120V	140V
V_{CES}	Collector – Emitter Voltage ($V_{BE} = 0$)	100V	120V	140V
V_{CEO}	Collector – Emitter Voltage (Open Base)	60V	70V	75V
V_{EBO}	Collector – Emitter Voltage (Open Base)		5V	
I_C	Collector Current		5A	
I_{CM}	Peak Collector Current		8A	
I_B	Base Current		1A	
I_{BM}	Peak Base Current		2A	
$-I_{BM}$	Peak Reverse Base Current		2A	
P_{tot}	Power Dissipation	$T_{amb} \leq 75^{\circ}C$ $T_{amb} \leq 25^{\circ}C$	14W	
P_{tot}	Power Dissipation		1.25W	
T_{stg}	Storage Temperature Range		-65 to 150°C	
T_j	Maximum Junction Temperature		150°C	

ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO} Collector – Base Cut-off Current	$I_E = 0$ $V_{CB} = 80\text{V}$	SMX35			10	μA
	$T_j = 100^\circ\text{C}$	SMX35			50	μA
	$I_E = 0$ $V_{CB} = 100\text{V}$	SMX36/37			10	μA
	$T_j = 100^\circ\text{C}$	SMX36/37			50	μA
I_{EBO} Emitter Cut-off Current	$I_C = 0$ $V_{EB} = 4\text{V}$			5		nA
	$I_C = 0$ $V_{EB} = 5\text{V}$				10	μA
	$I_C = 0$ $V_{EB} = 5\text{V}$				1	mA
h_{FE} DC Current Gain	$I_C = 0.5\text{A}$ $V_{CE} = 10\text{V}$	SMX35/36	45	150	450	—
		SMX37	45	80	450	
$V_{CE(sat)}$ Collector – Emitter Saturation Voltage	$I_C = 5\text{A}$ $I_B = 0.5\text{A}$	SMX35/37			0.9	V
	$I_C = 5\text{A}$ $I_B = 0.5\text{A}$	SMX36			0.7	
	$I_C = 7\text{A}$ $I_B = 0.7\text{A}$	SMX35/37			1.2	V
$V_{BE(sat)}$ Base – Emitter Saturation Voltage	$I_C = 5\text{A}$ $I_B = 0.5\text{A}$				1.6	V
	$I_C = 7\text{A}$ $I_B = 0.7\text{A}$	SMX35/37			1.8	
C_C Collector Capacitance	$I_E = I_e = 0$ $V_{CB} = 10\text{V}$ $f = 1\text{MHz}$			40	60	pF
f_T Transition Frequency	$I_C = 0.5\text{A}$ $V_{CE} = 5\text{V}$ $T_{amb} = 25^\circ\text{C}$ $f = 35\text{MHz}$			100		MHz

SWITCHING CHARACTERISTICS (Between 10% and 90% levels)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_{on} Turn-On Time	$I_{Con} = 1\text{A}$		0.06	0.1	μs
t_{off} Turn-Off Time	$I_{Bon} = -I_{Boff} = 0.1\text{A}$		0.6	0.8	
t_{on} Turn-On Time	$I_{Con} = 2\text{A}$			80	ns
t_{off} Turn-Off Time	$I_{Bon} = -I_{Boff} = 0.2\text{A}$		0.45	0.7	
t_{on} Turn-On Time	$I_{Con} = 5\text{A}$		180	300	ns
t_{off} Turn-Off Time	$I_{Bon} = I_{Boff} = 0.5\text{A}$		320	500	

THERMAL RESISTANCE

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$R_{\theta j-mb}$ Thermal Resistance Junction to Mounting Base				5	K / W
$R_{\theta ja}$ Thermal Resistance Junction to Ambient in free air				100	K / W