

SMD Power Transistor (NPN)

Features

- Designed for high voltage, high speed power switching inductive circuits applications
- RoHS compliance



D-PACK
(TO-252)



Mechanical Data

Case:	D-PACK(TO-252), Plastic Package
Terminals:	Solderable per MIL-STD-202G, Method 208
Weight:	0.3 grams

Maximum Ratings ($T_{Ambient}=25^{\circ}\text{C}$ unless noted otherwise)

Symbol	Description	MJD13003	Unit
V_{CEO}	Collector-Emitter Voltage	400	V
V_{CEV}	Collector- Emitter Voltage	700	V
V_{EBO}	Emitter-Base Voltage	9.0	V
I_C	Collector Current Continuous	1.5	A
	Collector Current Peak*	3.0	A
I_B	Base Current Continuous	0.75	A
	Base Current Peak*	1.5	A
I_E	Emitter Current Continuous	2.25	A
	Emitter Current Peak*	4.5	A
P_D	Power Dissipation at $T_C=25^{\circ}\text{C}$	15	W
	Derate above 25°C	0.12	W/ $^{\circ}\text{C}$
**P_D	Power Dissipation at $T_A=25^{\circ}\text{C}$	1.56	W
	Derate above 25°C	0.0125	W/ $^{\circ}\text{C}$
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-65 to +150	$^{\circ}\text{C}$

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Thermal Characteristics

Symbol	Description	MJD3055	Unit
RthJC	Thermal Resistance from Junction to Case	8.33	°C/W
**RthJA	Thermal Resistance from Junction to Ambient	80	°C/W
TL	Maximum Lead Temperature for Soldering Purposes	260	°C

Note: * Pulse Test: Pulse Width=5ms, Duty Cycle≤10%

**These ratings are applicable when surface mounted on the minimum pad sizes recommended.

Electrical Characteristics ($T_{Ambient}=25^{\circ}\text{C}$ unless noted otherwise)

Symbol	Description	MJD13003		Unit	Conditions
		Min.	Max.		
V_{CEO}	Collector Emitter Voltage	400	-	V	I _C =1mA, I _B =0
I_{CEO}	Collector Cut-off Current	-	0.1	mA	V _{CE} =Rated Value, V _{BE(off)} =1.5V
		-	2.0	mA	V _{CE} =Rated Value, V _{BE(off)} =1.5V, T _c =100°C
I_{EBO}	Emitter Cut-off Current	-	1.0	mA	V _{EB} =9V, I _C =0
*h_{FE}	D.C. Current Gain	8.0	40		V _{CE} =2V, I _C =0.5A
		5.0	25		V _{CE} =2V, I _C =1A
*V_{CE(sat)}	Collector Emitter Saturation Voltage	-	0.5	V	I _C =0.5A, I _B =0.1A
		-	1.0	V	I _C =1.0A, I _B =0.25A
		-	3.0	V	I _C =1.5A, I _B =0.5A
		-	1.0	V	I _C =1.0A, I _B =0.25A, T _c =100°C
*V_{BE(sat)}	Base Emitter Saturation Voltage	-	1.0	V	I _C =0.5A, I _B =0.1A
		-	1.2	V	I _C =1.0A, I _B =0.25A
		-	1.1	V	I _C =1.0A, I _B =0.25A, T _c =100°C
f_T	Current Gain Bandwidth Product	4.0	-	MHz	V _{CE} =10V, I _C =100mA, f=1MHz
C_{ob}	Out-Put Capacitance	21 (typ.)		pF	V _{CB} =10V, I _E =0, f=0.1MHz

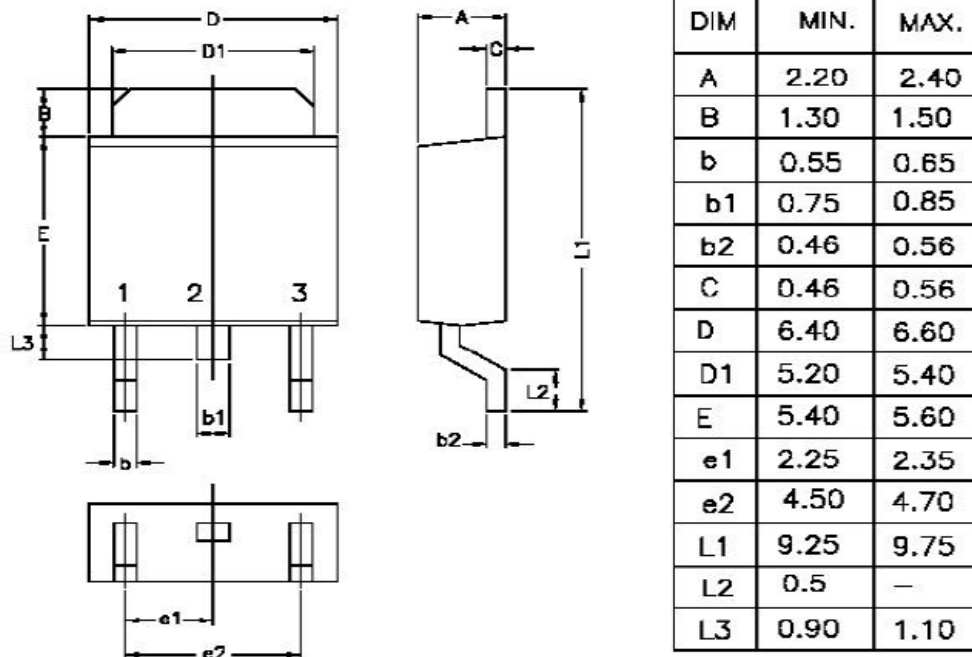
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Symbol	Description	MJD122		Unit	Conditions
		Min.	Max.		
td	Delay Time	-	0.1	μs	VCC=125V, IC=1.0A IB1=-IB2=0.2A, tp=25μs, Duty Cycle≤1.0%
tr	Rise Time	-	1.0	μs	
ts	Storage Time	-	4.0	μs	
tf	Fall Time	-	0.7	μs	

Note: *Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Dimensions in mm



PIN CONFIGURATION

1. BASE
2. COLLECTOR
3. EMITTER

**D-PACK
(TO-252)**

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