

MJE13005

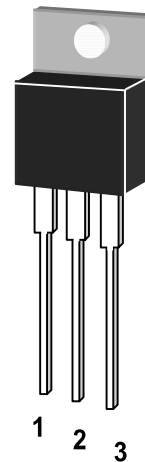
NPN Silicon Power Transistors

These devices are designed for high-voltage, high-speed power switching inductive circuits where fall time is critical.

They are particularly suited for 115 and 220V SWITCHMODE applications such as Switching Regulator's, Inverters, Motor Controls, Solenoid / Relay drivers and Deflection circuits.

SPECIFICATION FEATURES:

- V_{CEO} 400V
- Reverse Bias SOA with Inductive Loads @ $T_C=100^\circ\text{C}$
- Inductive Switching Matrix 2 to 4 Amp, 25 and 100°C
 t_c @ 3A, 100°C is 180 ns (Typ).
- SOA and Switching Applications Information.



1. Base 2. Collector 3. Emitter

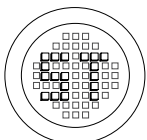
TO-220 Plastic Package

Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

	Symbol	Value	Unit
Collector Emitter Voltage	V_{CEO}	400	Vdc
Collector Base Voltage	V_{CBO}	700	Vdc
Emitter Base Voltage	V_{EBO}	9	Vdc
Collector Current - Continuous	I_C	4	Adc
- Peak ¹⁾	I_{CM}	8	
Base Current - Continuous	I_B	2	Adc
- Peak ¹⁾	I_{BM}	4	
Emitter Current - Continuous	I_E	6	Adc
- Peak ¹⁾	I_{EM}	12	
Total Power Dissipation @ $T_A=25^\circ\text{C}$	P_D	2	Watts
Derate above 25°C		16	mW/ $^\circ\text{C}$
Total Power Dissipation @ $T_C=25^\circ\text{C}$	P_D	75	Watts
Derate above 25°C		600	mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_s	-65 to +150	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient	R_{YJA}	62.5	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	R_{YJC}	1.67	$^\circ\text{C}/\text{W}$
Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T_L	275	$^\circ\text{C}$

1) Pulse Test: Pulse Width=5ms, Duty Cycle \leq 10%.

G S P FORM A IS AVAILABLE



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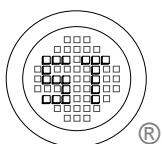
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Characteristics at Ta=25 °C

	Symbol	Min.	Typ.	Max.	Unit	
DC Current Gain						
at V _{CE} =5Vdc, I _C =1Adc	h _{FE}	10	-	60	-	
at V _{CE} =5Vdc, I _C =2Adc	h _{FE}	8	-	40	-	
Collector Emitter Sustaining Voltage						
at I _C =10mA	V _{CEO}	400	-	-	Vdc	
Collector Cutoff Current						
at V _{CBO} =Rated Value, V _{BE(off)} =1.5Vdc	I _{CBO}	-	-	1	mAdc	
at V _{CBO} =Rated Value, V _{BE(off)} =1.5Vdc, T _C =100°C	I _{CBO}	-	-	5	mAdc	
Emitter Cutoff Current						
at V _{EB} =9Vdc	I _{EBO}	-	-	1	mAdc	
Collector Emitter Saturation Voltage						
at I _C =1Adc, I _B =0.2Adc	V _{CE(sat)}	-	-	0.5	Vdc	
at I _C =2Adc, I _B =0.5Adc	V _{CE(sat)}	-	-	0.6	Vdc	
at I _C =4Adc, I _B =1Adc	V _{CE(sat)}	-	-	1	Vdc	
at I _C =2Adc, I _B =0.5Adc, T _C =100°C	V _{CE(sat)}	-	-	1	Vdc	
Base Emitter Saturation Voltage						
at I _C =1Adc, I _B =0.2Adc	V _{BE(sat)}	-	-	1.2	Vdc	
at I _C =2Adc, I _B =0.5Adc	V _{BE(sat)}	-	-	1.6	Vdc	
at I _C =2Adc, I _B =0.5Adc, T _C =100°C	V _{BE(sat)}	-	-	1.5	Vdc	
Current Gain Bandwidth Product						
at V _{CE} =10Vdc, I _C =500mAdc, f=1MHz	f _T	4	-	-	MHz	
Output Capacitance						
at V _{CB} =10Vdc, f=0.1MHz	C _{ob}	-	65	-	pF	
Delay Time	(V _{CE} =125Vdc, I _C =2A, I _{B1} =I _{B2} =0.4A, t _p =25μs, Duty Cycle≤1%)	t _d	-	0.025	0.1	μs
Rise Time		t _r	-	0.3	0.7	μs
Storage Time		t _s	-	1.7	4	μs
Fall Time		t _f	-	0.4	0.9	μs
Voltage Storage Time		t _{sv}	-	0.9	4	μs
Crossover Time		t _c	-	0.32	0.9	μs
Fall Time		t _{fi}	-	0.16	-	μs

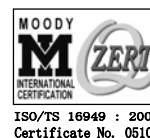
Pulse Test: Pulse Width=300μs, Duty Cycle=2%.

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SEMTECH ELECTRONICS LTD.

(Subsidiary of Semtech International Holdings Limited, a company listed on the Hong Kong Stock Exchange, Stock Code: 724)



ISO/TS 16949 : 2002
Certificate No. 05103



ISO 14001
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ISO 9001 : 2000
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