Absolute Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-6	V
Peak Pulse Collector Current	I_{CM}	-10	A
Repetitive Peak Pulse Collector Current (Note 5)	I_{CRP}	-5	A
Continuous Collector Current	I_C	-4	A
Peak Pulse Base Current	I_{BM}	-2	A
Continuous Base Current	I_B	-1	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6) @ T_A = 25°C	P_D	0.9	W
Thermal Resistance, Junction to Ambient Air (Note 6) @ T_A = 25°C	$R_{\theta JA}$	139	°C/W
Power Dissipation (Note 7) @ T_A = 25°C	P_D	2	W
Thermal Resistance, Junction to Ambient Air (Note 7) @ T_A = 25°C	$R_{\theta JA}$	62.5	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 5. Pulse width ≤ 10ms; Duty cycle ≤ 0.2
6. For a device mounted on FR-4 PCB with minimum recommended pad layout.
7. For a device mounted on FR-4 PCB with 1inch^2 copper pad layout.

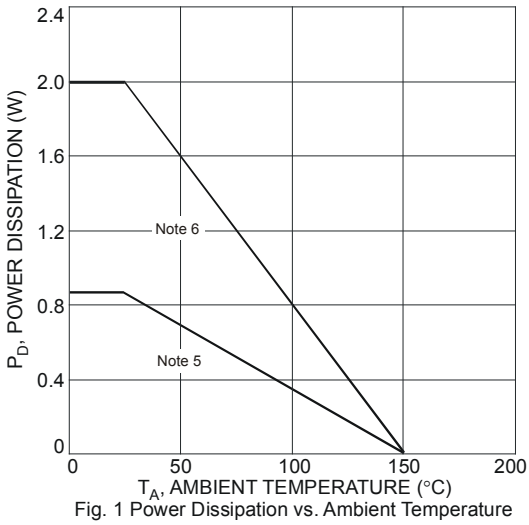

Fig. 1 Power Dissipation vs. Ambient Temperature

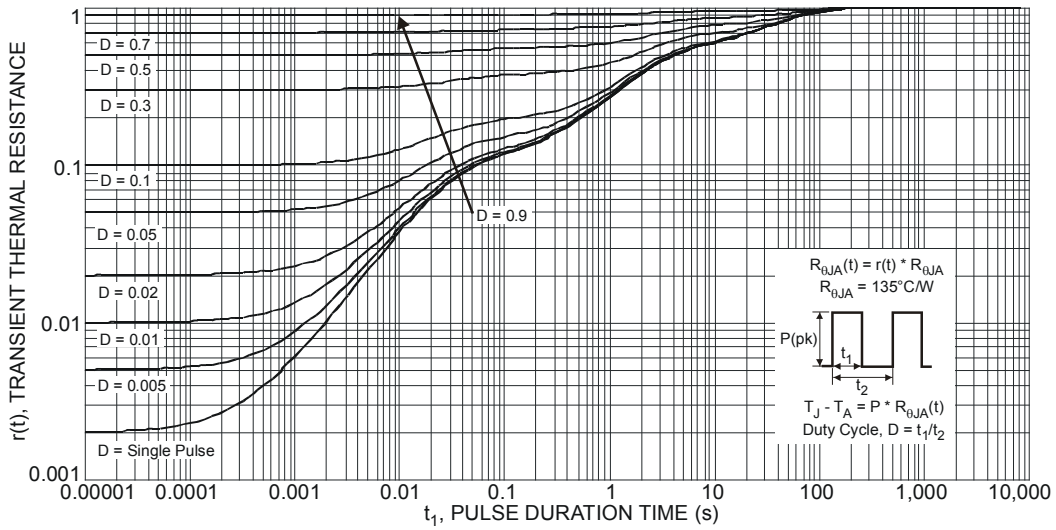

Fig. 2 Transient Thermal Response

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BV_{CBO}	-40	—	—	V	I_C = -100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	-40	—	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	I_E = -100μA
Collector-Base Cutoff Current	I_{CBO}	—	—	-100	nA	V_{CB} = -30V, I_E = 0
		—	—	-50	μA	V_{CB} = -30V, I_E = 0, T_A = 150°C
Emitter-Base Cutoff Current	I_{EBO}	—	—	-100	nA	V_{EB} = -5V, I_C = 0
DC Current Gain (Note 8)	h_{FE}	250	—	—	—	V_{CE} = -2V, I_C = -0.5A
		200	350	—		V_{CE} = -2V, I_C = -1A
		150	—	—		V_{CE} = -2V, I_C = -2A
		50	—	—		V_{CE} = -2V, I_C = -5A
Collector-Emitter Saturation Voltage (Note 8)	$V_{CE(sat)}$	—	—	-120	mV	I_C = -0.5A, I_B = -5mA
		—	—	-170		I_C = -1A, I_B = -10mA
		—	-70	-160		I_C = -2A, I_B = -200mA
		—	-165	-340		I_C = -4A, I_B = -200mA
		—	-150	-375		I_C = -5A, I_B = -500mA
Equivalent On-Resistance	$R_{CE(sat)}$	—	-30	-75	mΩ	I_C = -5A, I_B = -500mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.1	V	I_C = -4A, I_B = -200mA
		—	—	-1.2		I_C = -5A, I_B = -500mA
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	—	—	-1.0	V	V_{CE} = -2V, I_C = -2A
Transition Frequency	f_T	60	—	—	MHz	V_{CE} = -10V, I_C = -0.1A, f = 100MHz
Collector Capacitance	C_c	—	—	105	pF	V_{CB} = -10V, I_E = 0A, f = 1MHz
Turn-On Time	t_{on}	—	63	—	ns	V_{CC} = -10V, I_C = -2A, I_{B1} = $-I_{B2}$ = -200mA
Delay Time	t_d	—	15	—	ns	
Rise Time	t_r	—	48	—	ns	
Turn-Off Time	t_{off}	—	280	—	ns	
Storage Time	t_s	—	232	—	ns	
Fall Time	t_f	—	48	—	ns	

Notes: 8. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

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

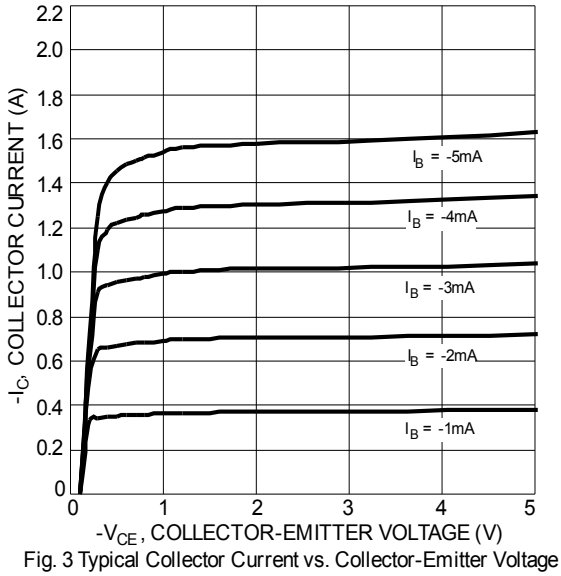

Fig. 3 Typical Collector Current vs. Collector-Emitter Voltage

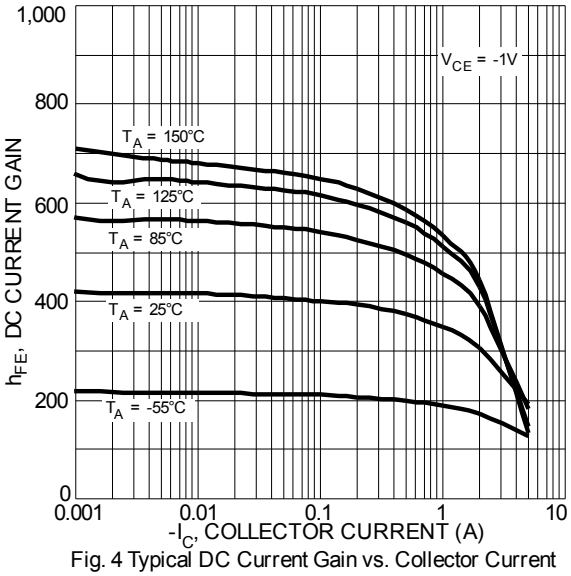

Fig. 4 Typical DC Current Gain vs. Collector Current

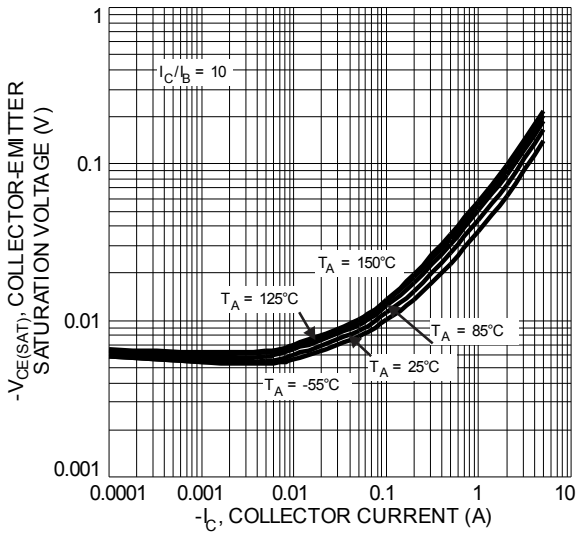

Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

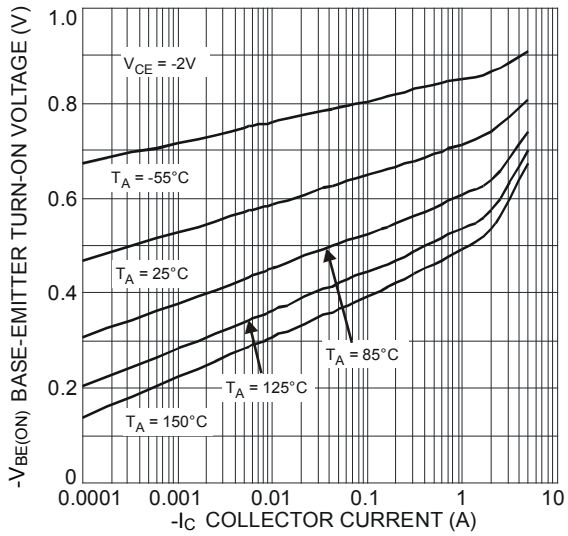

Fig. 6 Typical Base-Emitter Turn-On Voltage vs. Collector Current

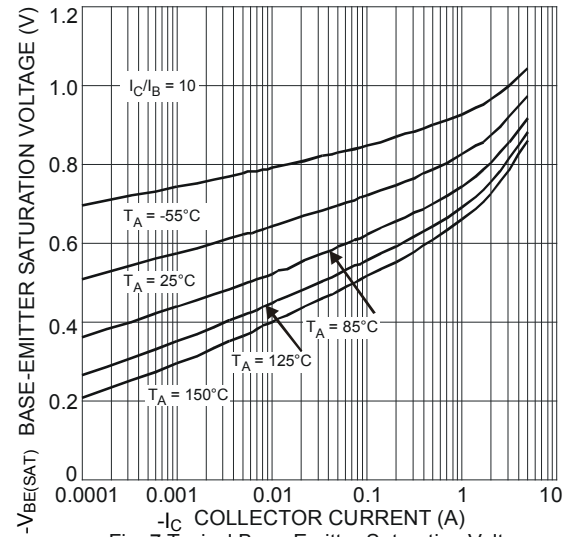

Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

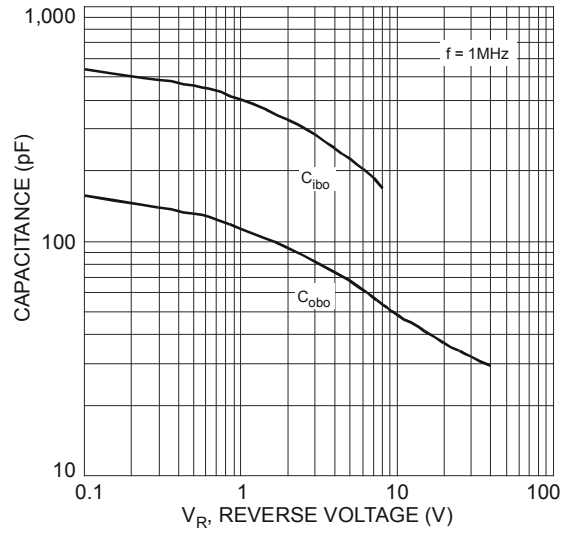

Fig. 8 Typical Capacitance Characteristics

Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

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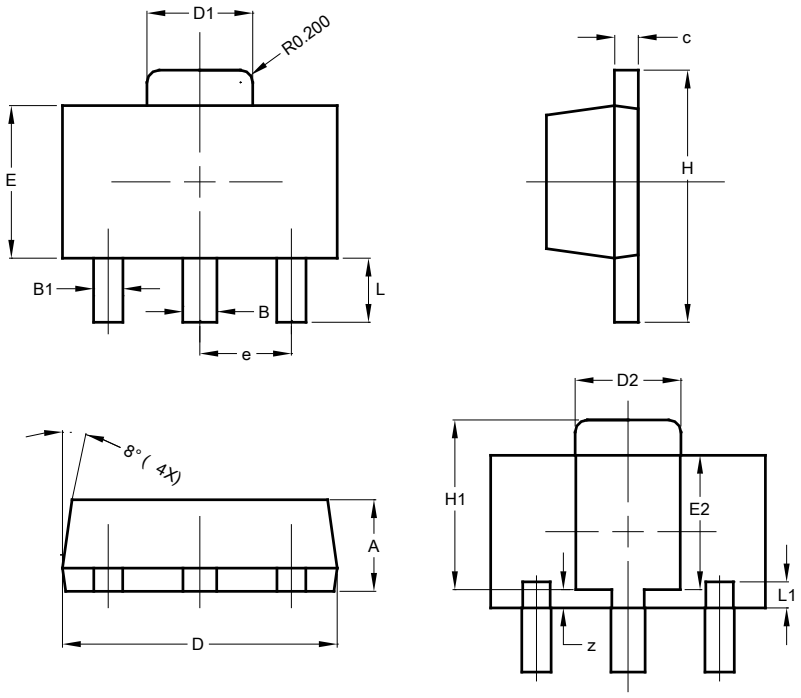

SOT89			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

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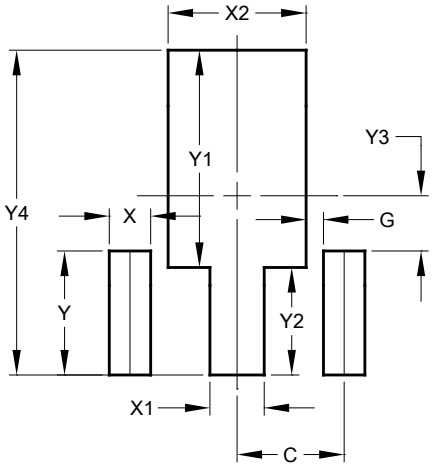

Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530

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