Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-140	V
Collector-Emitter Voltage	V_{CEO}	-120	V
Emitter-Base Voltage	V_{EBO}	-10	V
Continuous Collector Current	I_C	-1	A
Peak Pulse Current	I_{CM}	-4	A
Base Current	I_B	-0.5	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

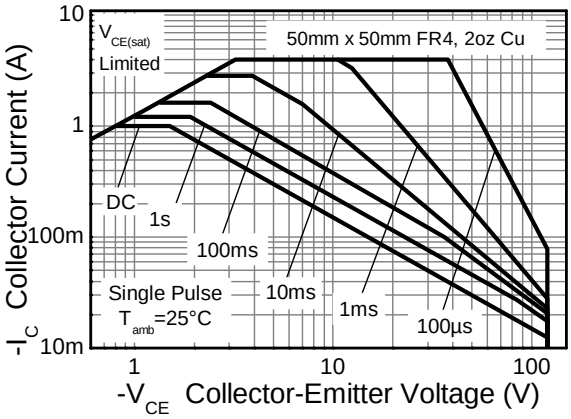
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P_D	0.84 6.72	W mW/°C
	(Note 6)		1.34 10.72	
	(Note 7)		1.50 12.0	
	(Note 8)		2.0 16.0	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	149	°C/W
	(Note 6)		93	
	(Note 7)		83	
	(Note 8)		60	
Thermal Resistance, Junction to Leads	(Note 9)	$R_{\theta JL}$	43.8	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 10)

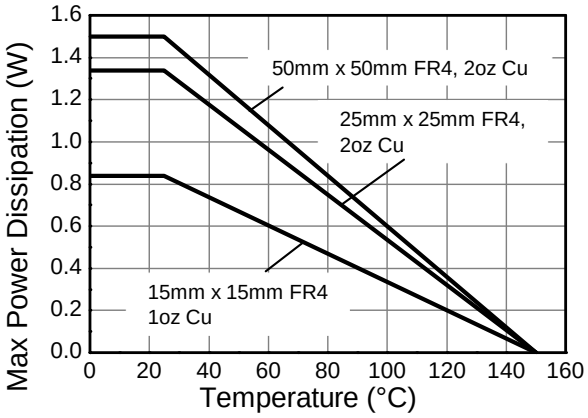
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	2,000	V	2
Electrostatic Discharge – Machine Model	ESD MM	200	V	B

Notes:
5. For a device mounted with the exposed collector pad on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Same as Note 5, except the device is mounted on 25mm x 25mm 2oz copper.
7. Same as Note 5, except the device is mounted on 50mm x 50mm 2oz copper.
8. Same as Note 7, whilst measured at t < 5 seconds.
9. Thermal resistance from junction to solder-point (at the end of the leads).
10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

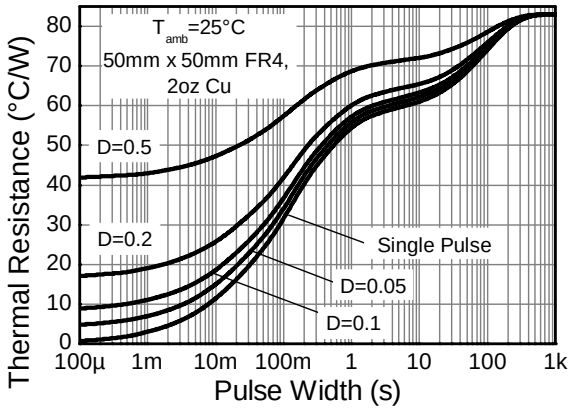
Thermal Characteristics and Derating Information



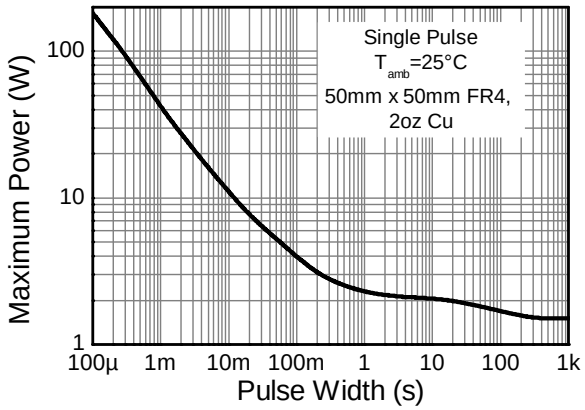
Safe Operating Area



Derating Curve



Transient Thermal Impedance



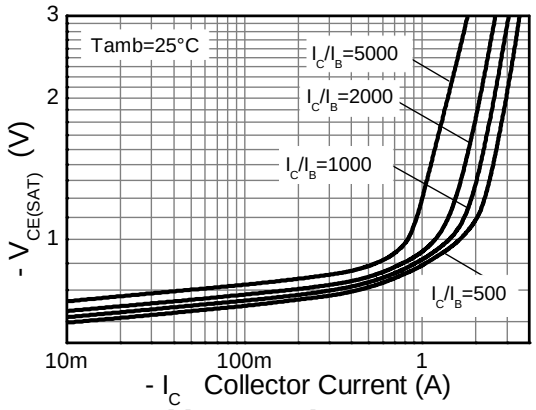
Pulse Power Dissipation

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

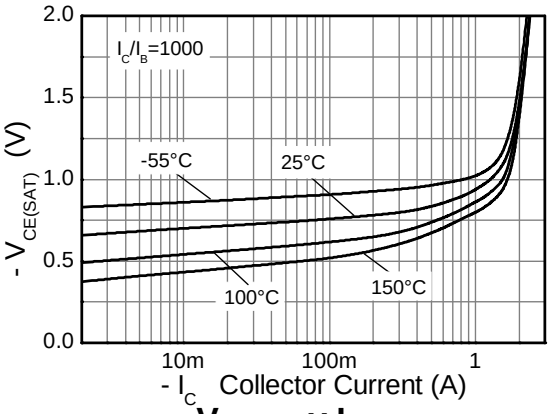
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	-140	-170	—	V	I_C = -100µA
Collector-Emitter Breakdown Voltage (Base Open) (Note 11)	BV_{CEO}	-120	-140	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-10	-16	—	V	I_E = -100µA
Collector-Base Cutoff Current	I_{CBO}	—	<-1 —	-100 -10	nA µA	V_{CB} = -120V V_{CB} = -120V, T_A = +100°C
Emitter-Base Cutoff Current	I_{CES}	—	<-0.1	-10	µA	V_{CB} = -120V
Emitter-Base Cutoff Current	I_{EBO}	—	<-1	-100	nA	V_{EB} = -5.6V
ON CHARACTERISTICS (Note 11)						
Static Forward Current Transfer Ratio	h_{FE}	3,000 3,000 3,000 2,000	14,000 11,000 11,000 8,000	— — 30,000 —	—	I_C = -50mA, V_{CE} = -5V I_C = -500mA, V_{CE} = -5V I_C = -1A, V_{CE} = -5V I_C = -2A, V_{CE} = -5V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-0.77 -0.9 -1.3	-0.9 -1.1 -2.0	V	I_C = -250mA, I_B = -0.25mA I_C = -1A, I_B = -1mA I_C = -2A, I_B = -2mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	-1.5	-1.7	V	I_C = -1A, I_B = -1mA
Base-Emitter On Voltage	$V_{BE(ON)}$	—	-1.4	-1.7	V	I_C = -1A, V_{CE} = -5V
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	—	150	—	MHz	I_C = -100mA, V_{CE} = -10V, f = 20MHz
Input Capacitance	C_{IBO}	—	67	90	pF	V_{EB} = -0.5V, f = 1MHz
Output Capacitance	C_{OBO}	—	22	40	pF	V_{CB} = -1V, f = 1MHz
Delay Time	t_D	—	556	—	ns	V_{CC} = -10V, I_C = -0.5A, I_{B1} = I_{B2} = -0.5mA
Rise Time	t_R	—	212	—	ns	
Storage Time	t_S	—	681	—	ns	
Fall Time	t_F	—	304	—	ns	

Note: 11. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

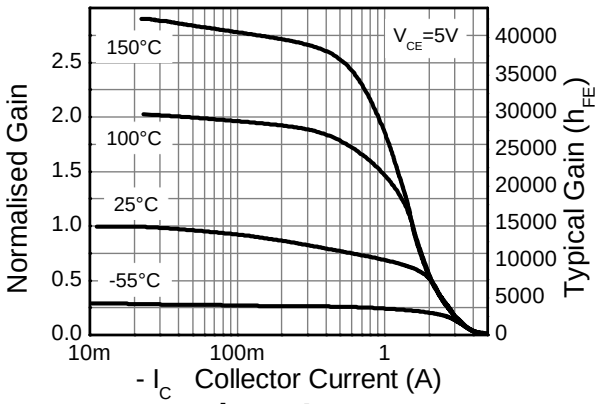
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



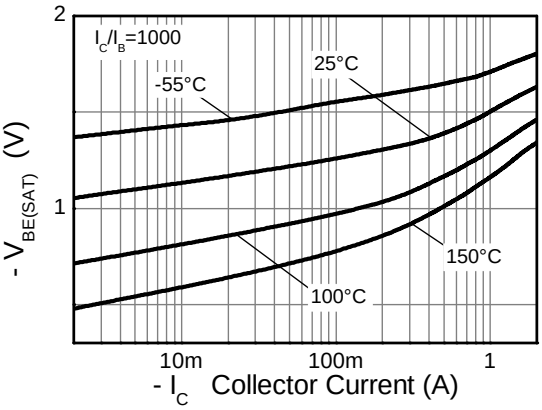
$V_{CE(SAT)}$ v I_C



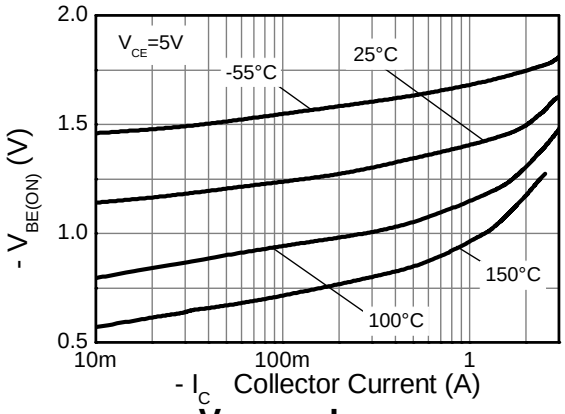
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



$V_{BE(SAT)}$ v I_C

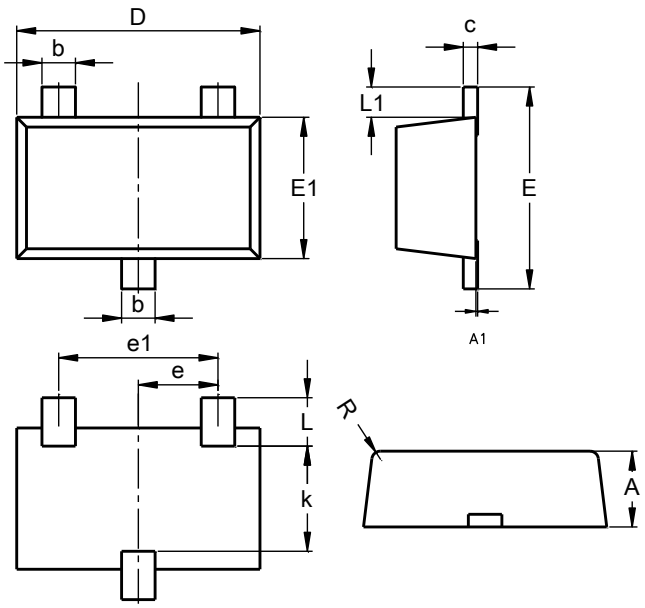


$V_{BE(ON)}$ v I_C

Package Outline Dimensions

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

SOT23F

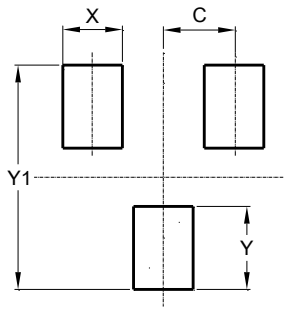


SOT23F			
Dim	**Min**	**Max**	**Typ**
A	0.80	1.00	0.90
b	0.35	0.50	0.44
c	0.10	0.20	0.16
D	2.80	3.00	2.90
e	0.95 REF		
e1	0.190 REF		
E	2.30	2.50	2.40
E1	1.50	1.70	1.65
k	1.20	-	-
L	0.30	0.65	0.50
L1	0.30	0.50	0.40
R	0.05	0.15	-
All Dimensions in mm			

Suggested Pad Layout

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

SOT23F



Dimensions	Value (in mm)
C	0.95
X	0.80
Y	1.110
Y1	3.000

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

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