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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-180	V
Collector-Emitter Voltage	V_{CEO}	-140	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-4	A
Peak Pulse Current	I_{CM}	-10	A

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

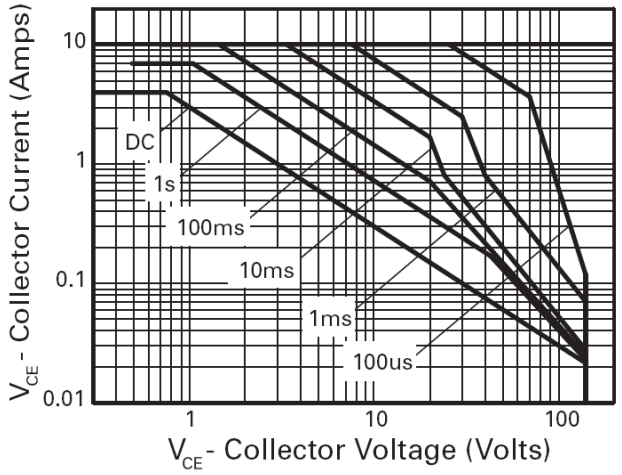
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P_D	3.0 24	W mW /°C
	(Note 6)		1.6 12.8	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\Theta JA}$	42	°C/W
	(Note 6)	$R_{\Theta JA}$	78	
Thermal Resistance Junction to Lead	(Note 7)	$R_{\Theta JL}$	8.84	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

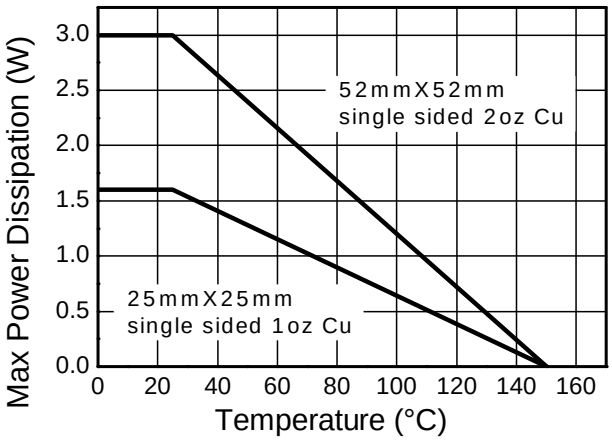
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge—Human Body Model	ESD HBM	4,000	V	3B
Electrostatic Discharge—Machine Model	ESD MM	400	V	C

Notes:
5. For a device mounted with the collector lead on 52mm × 52mm 2oz copper on a single-sided 1.6mm FR4 PCB; the device is measured under still air conditions whilst operating in steady-state.
6. Same as Note 5, except the device is mounted on 25mm × 25mm 1oz copper.
7. Thermal resistance from junction to solder-point (at the end of the collector lead).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

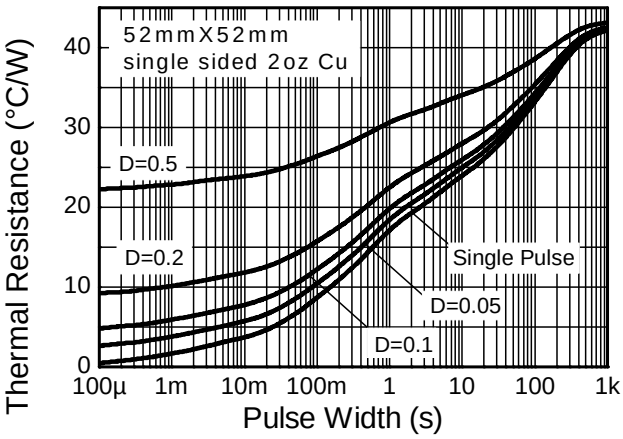
Thermal Characteristics and Derating Information



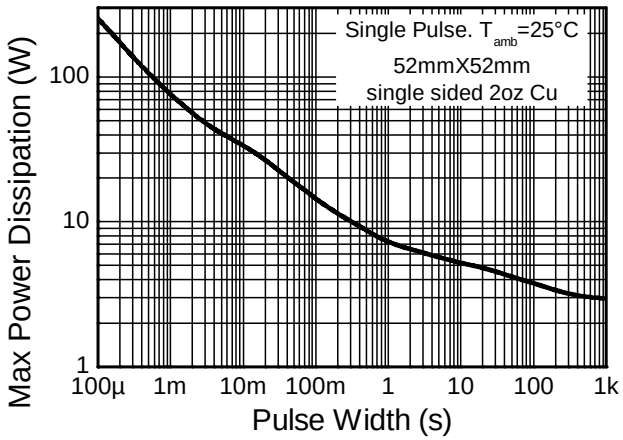
Safe Operating Area



Derating Curve



Transient Thermal Impedance



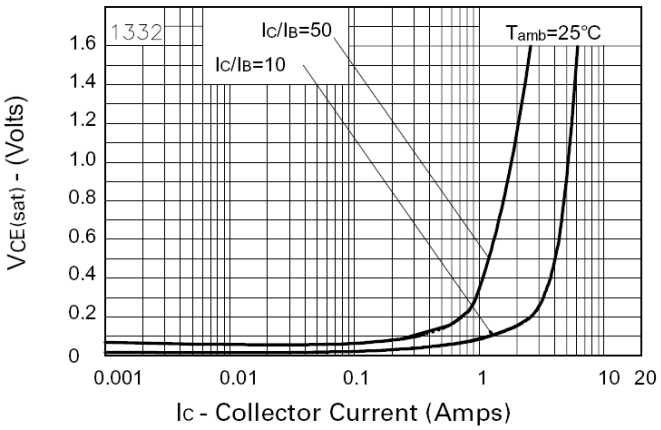
Pulse Power Dissipation

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

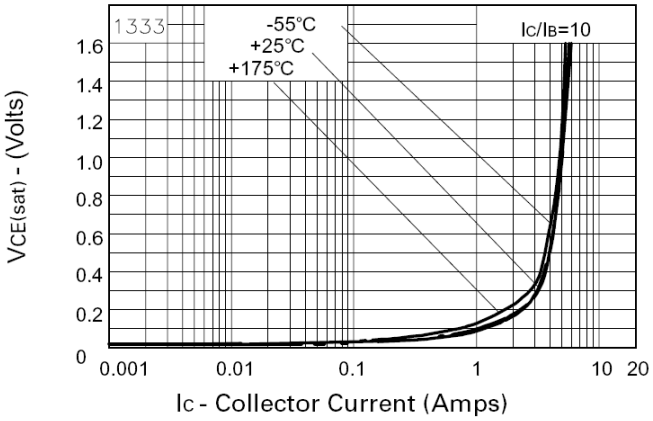
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-180	-210	—	V	I_C = -100µA
Collector-Emitter Breakdown Voltage	BV_{CER}	-180	-210	—	V	I_C = -1µA, $R_B \le 1k\Omega$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-140	-170	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8	—	V	I_E = -100µA
Collector Cut-Off Current	I_{CBO}	— —	<1 —	-50 -1	nA µA	V_{CB} = -150V V_{CB} = -150V, T_A = +100°C
Collector Cut-Off Current	I_{CER} R ≤1kΩ	— —	<1 —	-50 -1	nA µA	V_{CE} = -150V V_{CE} = -150V, T_A = +100°C
Emitter Cut-Off Current	I_{EBO}	—	—	-10	nA	V_{EB} = -6V
DC Current Transfer Static Ratio (Note 9)	h_{FE}	100	200	—	—	I_C = -10mA, V_{CE} = -5V
		100	200	300		I_C = -1A, V_{CE} = -5V
		75	140	—		I_C = -3A, V_{CE} = -5V
		—	10	—		I_C = -10A, V_{CE} = -5V
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	—	-30	-60	mV	I_C = -100mA, I_B = -5mA
		—	-70	-120		I_C = -500mA, I_B = -50mA
		—	-110	-150		I_C = -1A, I_B = -100mA
		—	-275	-370		I_C = -3A, I_B = -300mA
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	—	-970	-1,110	mV	I_C = -3A, I_B = -300mA
Base-Emitter Turn-On Voltage (Note 9)	$V_{BE(on)}$	—	-830	-950	mV	I_C = -3A, V_{CE} = -5V
Transitional Frequency (Note 9)	f_T	—	110	—	MHz	I_C = -100mA, V_{CE} = -10V, f = 50MHz
Output Capacitance	C_{obo}	—	40	—	pF	V_{CB} = -20V, f = 1MHz
Switching Time	t_{ON}	—	68	—	ns	V_{CC} = -50V, I_C = -1A, $-I_{B1} = I_{B2}$ = -100mA
	t_{OFF}	—	1,030	—		

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

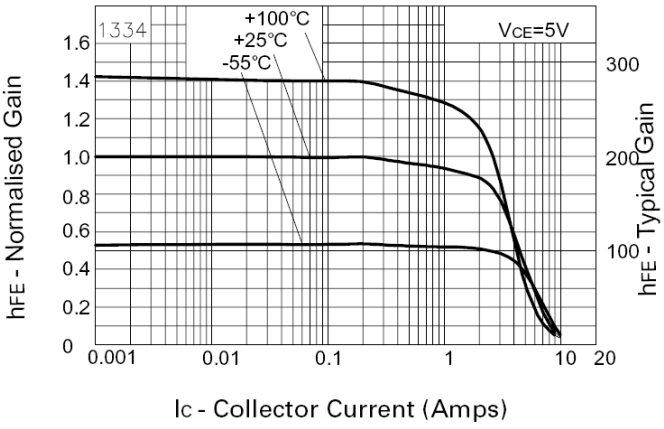
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



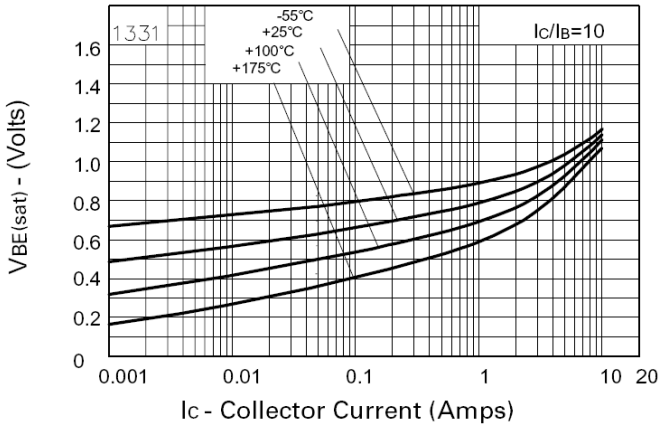
VCE(sat) v IC



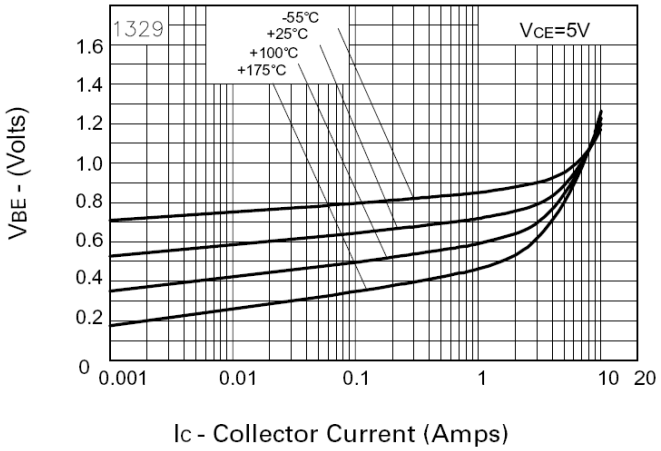
VCE(sat) v IC



hFE v IC



V BE(sat) v IC

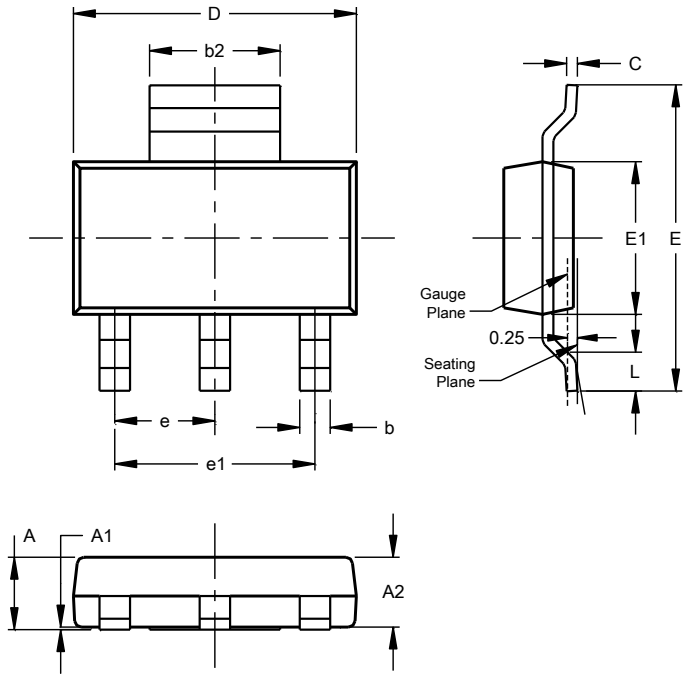


VBE(on) v IC

Package Outline Dimensions

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

SOT223 (Type DN)

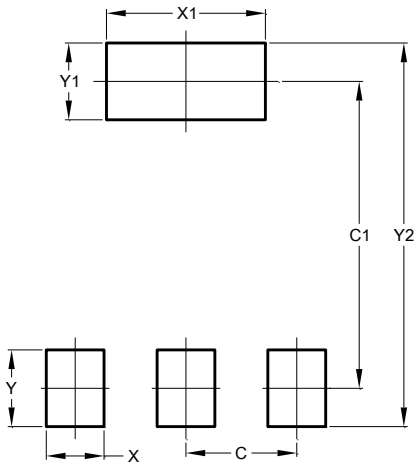


SOT223 (Type DN)			
Dim	**Min**	**Max**	**Typ**
A	—	1.70	—
A1	0.01	0.15	—
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	—
c	0.20	0.32	—
D	6.30	6.70	—
E	6.70	7.30	—
E1	3.30	3.70	—
e	—	—	2.30
e1	—	—	4.60
L	0.85	—	—
All Dimensions in mm			

Suggested Pad Layout

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

SOT223 (Type DN)



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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