

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}	32	V
Emitter-Base Voltage	V _{EBO}	6	V
Continuous Collector Current	I _C	1	A
Peak Pulse Current (Note 6)	I _{CM}	2	A

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

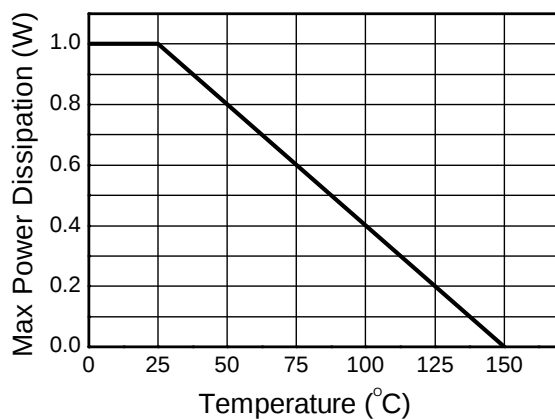
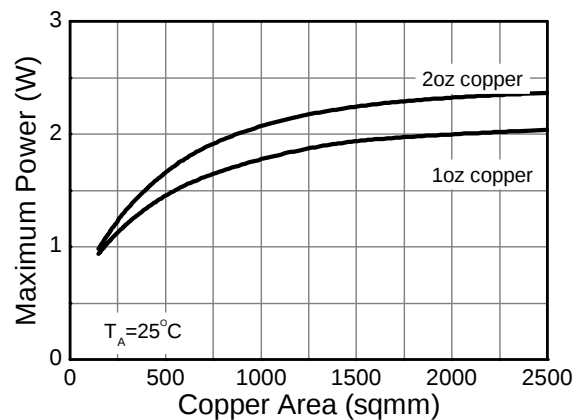
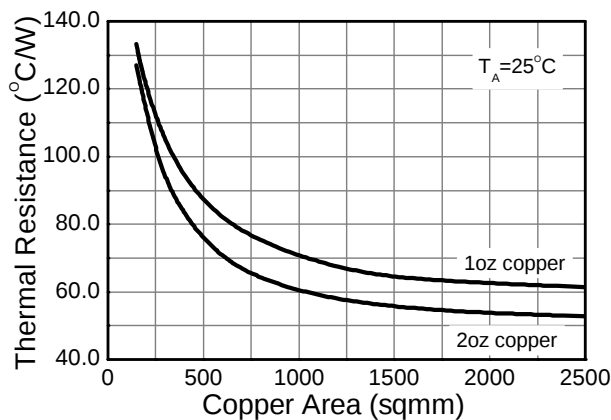
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	1	W
		1.5	
		2.0	
Thermal Resistance, Junction to Ambient Air	R _{θJA}	125	°C/W
		83	
		60	
Thermal Resistance, Junction to Case	R _{θJC}	18	°C/W
Thermal Resistance, Junction to Lead	R _{θJL}	22	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 9)

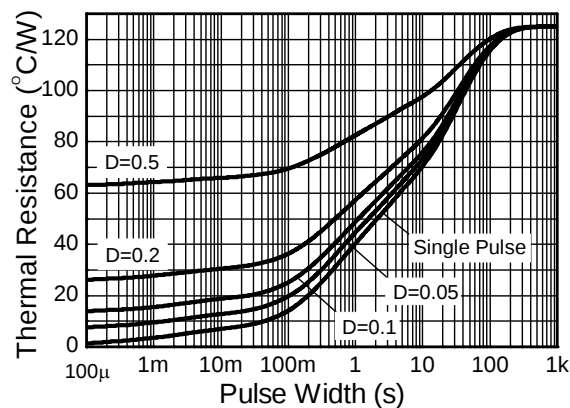
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
- 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.
 - Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
 - Same as note (5), except the device is mounted on 50mm x 50mm 1oz copper.
 - Thermal resistance from junction to solder-point (on the exposed collector pad).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

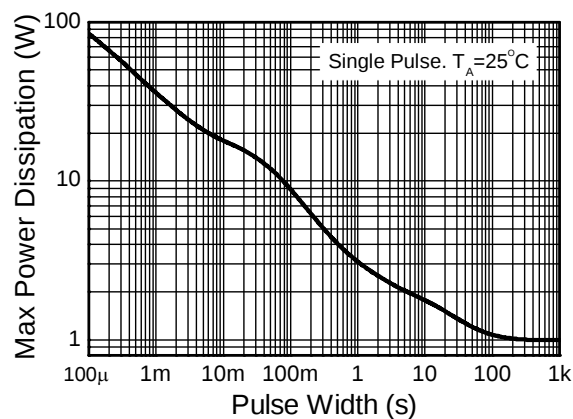
Thermal Characteristics and Derating Information



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}	40	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	32	—	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	6	—	—	V	I _E = 100μA
Collector-Emitter Cut-Off Current	I _{CES}	—	—	100	nA	V _{CE} = 32V
Collector-Base Cut-Off Current	I _{CBO}	—	—	100	nA	V _{CB} = 36V
Base-Emitter Cut-Off Current	I _{EBO}	—	—	100	nA	V _{EB} = 6V
Static Forward Current Transfer Ratio (Note 10)	2DD1664P	82	—	180	—	I _C = 100mA, V _{CE} = 3V
	2DD1664Q	120		270		
	2DD1664R	180		390		
Collector-Emitter Saturation Voltage (Note 10)	V _{CE(SAT)}	—	120	400	mV	I _C = 500mA, I _B = 50mA
Transition Frequency	f _T	—	280	—	MHz	I _E = 50mA, V _{CE} = 5V, f = 30MHz
Output Capacitance	C _{ob}	—	10	—	pF	I _E = 0A, V _{CB} = 10V, f = 1MHz

Note: 10. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.

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

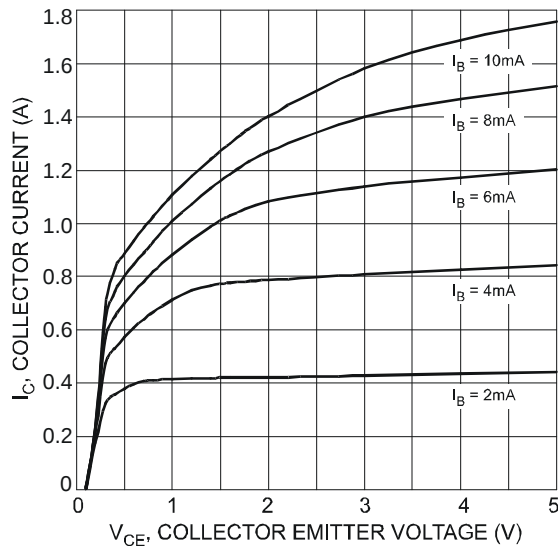


Figure 1. Typical Collector Current vs. Collector-Emitter Voltage

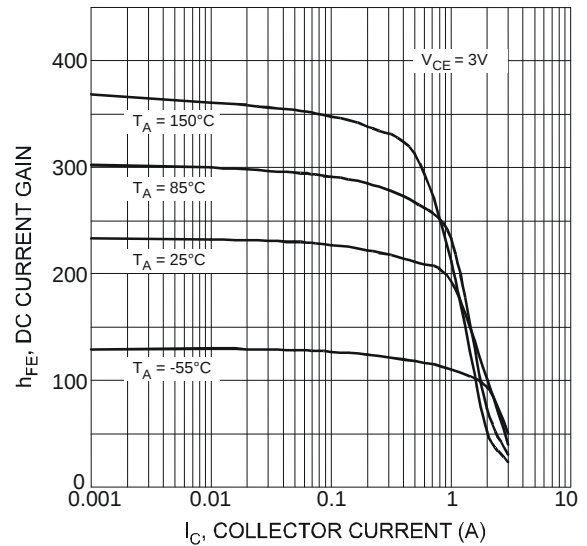


Figure 2. Typical DC Current Gain vs. Collector Current (2DD1664R)

Typical Electrical Characteristics (continued) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

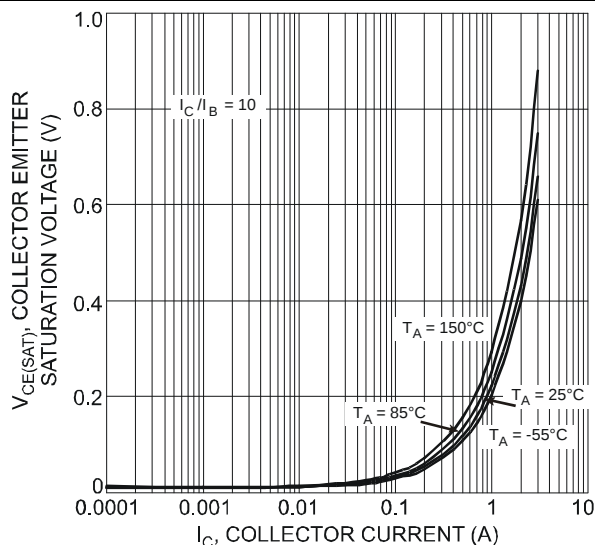


Figure 3. Typical Collector-Emitter Saturation Voltage vs. Collector Current

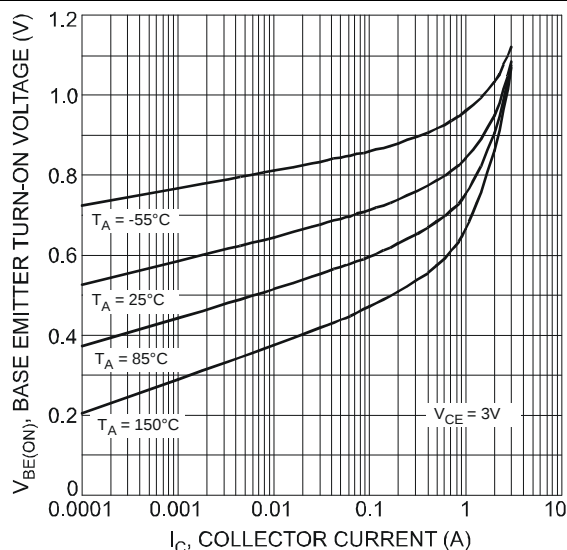


Figure 4. Typical Base-Emitter Turn-On Voltage vs. Collector Current

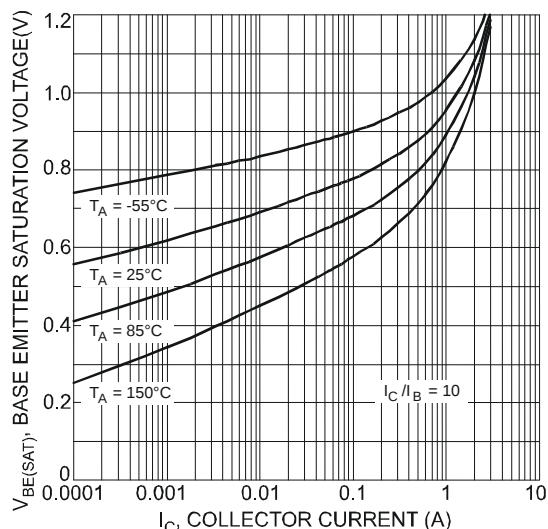


Figure 5. Typical Base-Emitter Saturation Voltage vs. Collector Current

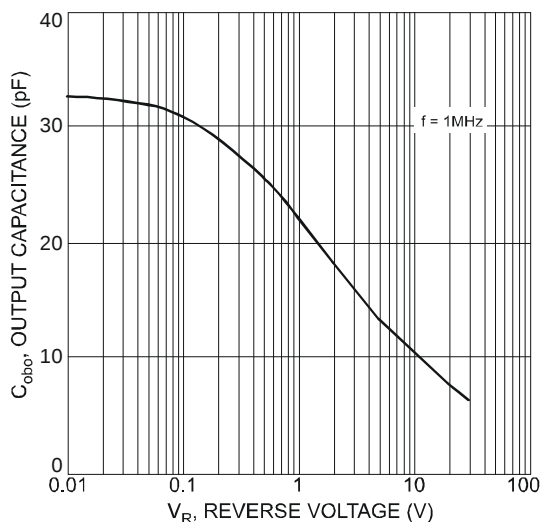


Figure 6. Typical Output Capacitance Characteristics

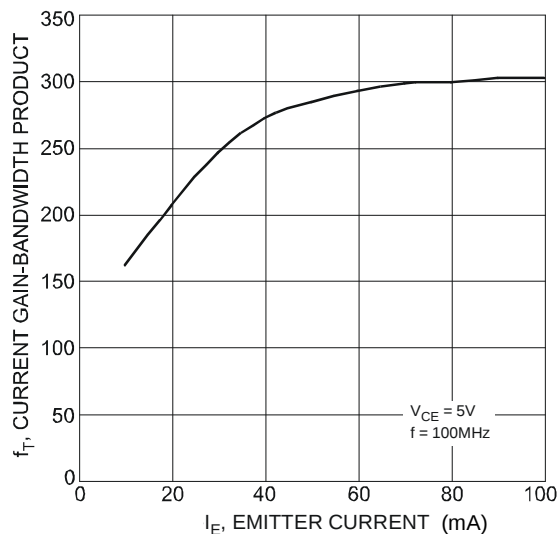
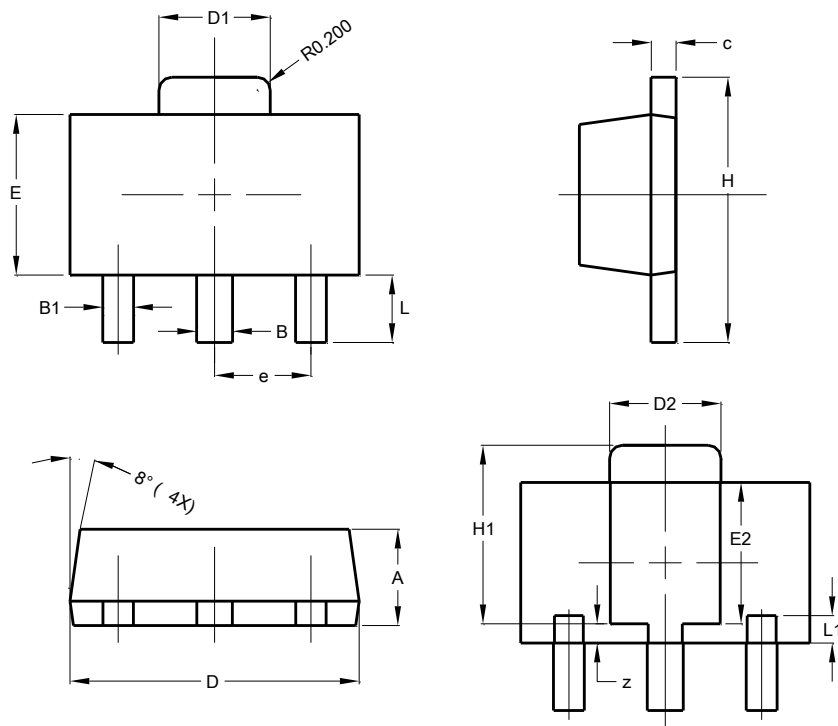


Figure 7. Typical Gain-Bandwidth Product vs. Emitter Current

Package Outline Dimensions

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

SOT89

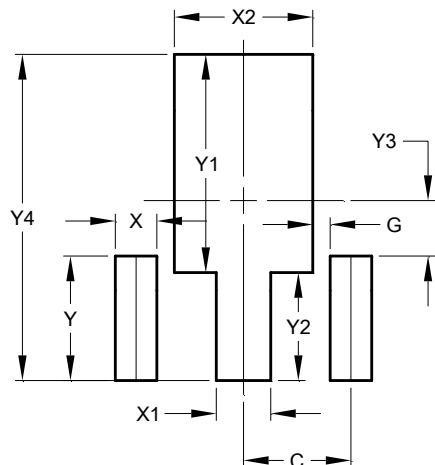


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in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

Suggested Pad Layout

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

SOT89



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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