

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	MMBTA55	MMBTA56	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-60	-80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-60	-80	V
Emitter-Base Voltage	V <sub>EBO</sub>	-4.0		V
Collector Current - Continuous	I <sub>C</sub>	-500		mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

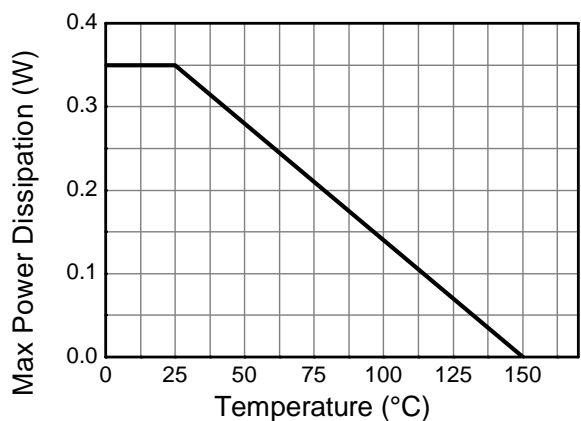
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	310	mW
		350	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	403	°C/W
		357	
Thermal Resistance, Junction to Leads	R <sub>θJL</sub>	350	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 9)

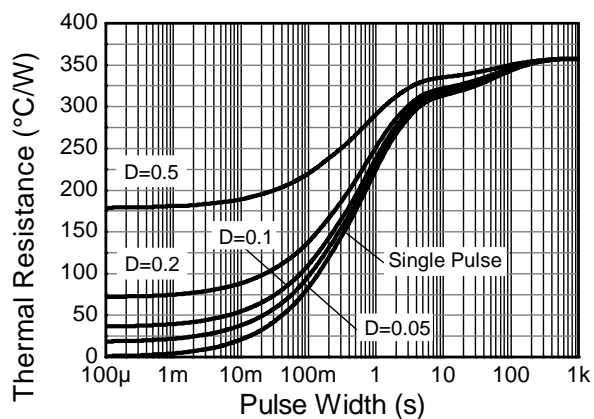
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

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

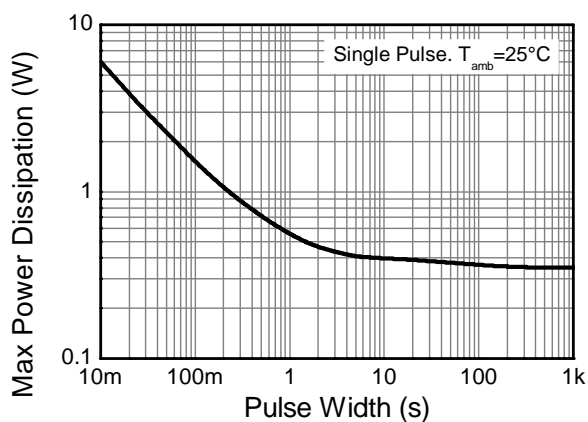
## Thermal Characteristics and Derating Information



**Derating Curve**



**Transient Thermal Impedance**



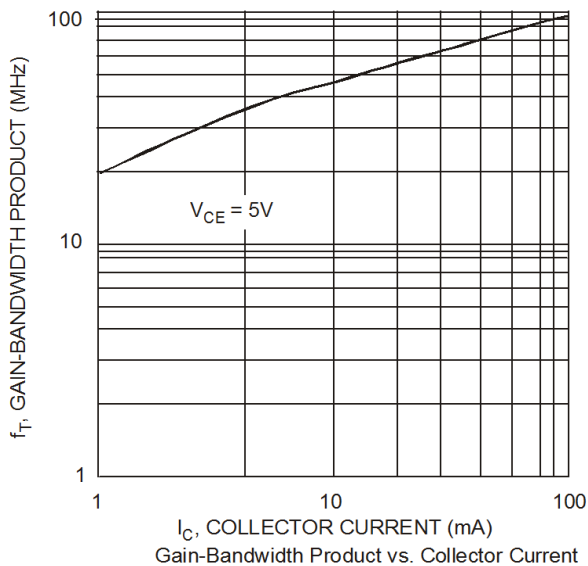
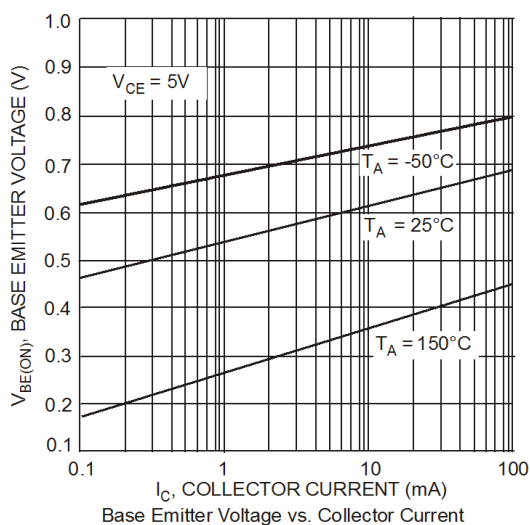
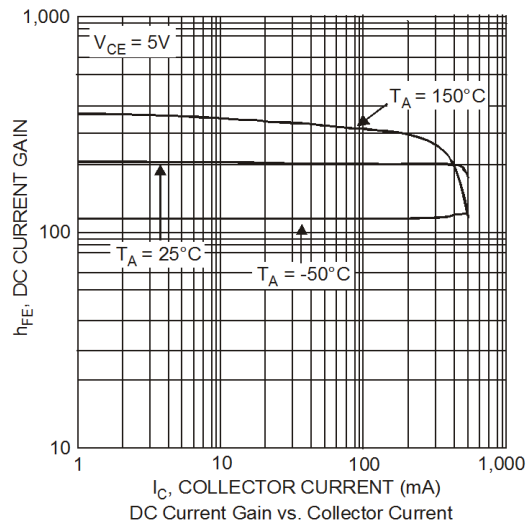
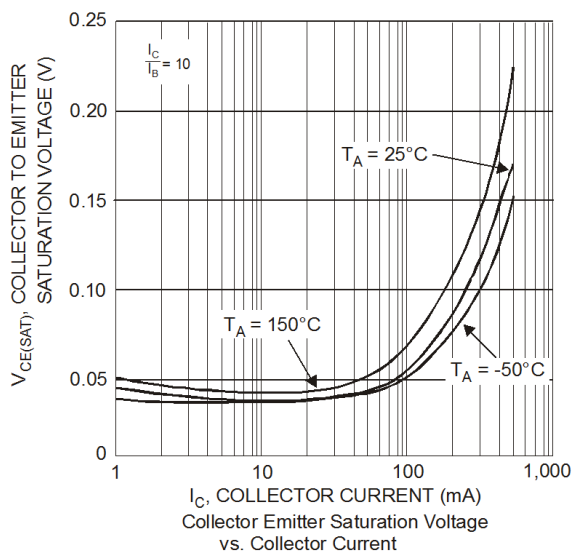
**Pulse Power Dissipation**

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Min	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 10)</b>						
Collector-Base Breakdown Voltage	MMBTA55 MMBTA56	BV <sub>CBO</sub>	-60 -80	—	V	I <sub>C</sub> = -100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	MMBTA55 MMBTA56	BV <sub>CEO</sub>	-60 -80	—	V	I <sub>C</sub> = -1.0mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage		BV <sub>EBO</sub>	-5.0	-4.0	—	I <sub>E</sub> = -100μA, I <sub>C</sub> = 0
Collector Cut-Off Current	MMBTA55 MMBTA56	I <sub>CBO</sub>	—	-100	nA	V <sub>CB</sub> = -60V, I <sub>E</sub> = 0 V <sub>CB</sub> = -80V, I <sub>E</sub> = 0
Collector Cut-Off Current		I <sub>CEX</sub>	—	-100	nA	V <sub>CE</sub> = -60V, I <sub>BO</sub> = 0V V <sub>CE</sub> = -80V, I <sub>BO</sub> = 0V
<b>ON CHARACTERISTICS (Note 10)</b>						
DC Current Gain		h <sub>FE</sub>	100	—	—	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -1.0V I <sub>C</sub> = -100mA, V <sub>CE</sub> = -1.0V
Collector-Emitter Saturation Voltage		V <sub>CE(SAT)</sub>	—	-0.25	V	I <sub>C</sub> = -100mA, I <sub>B</sub> = -10mA
Base-Emitter Saturation Voltage		V <sub>BE(SAT)</sub>	—	-1.2	V	I <sub>C</sub> = -100mA, V <sub>CE</sub> = -1.0V
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product		f <sub>T</sub>	50	—	MHz	V <sub>CE</sub> = -1.0V, I <sub>C</sub> = -100mA, f = 100MHz

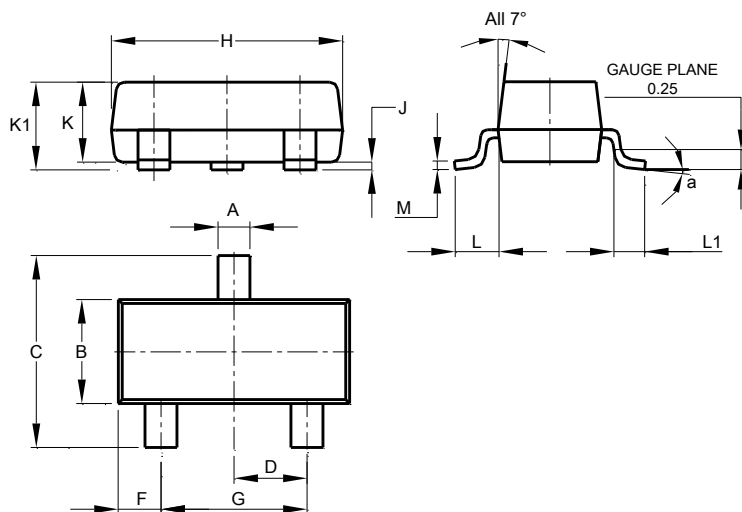
Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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



## Package Outline Dimensions

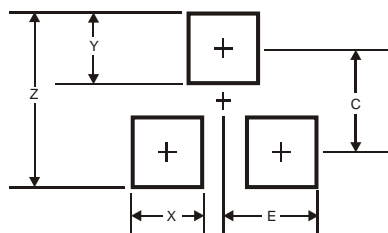
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	8°		
All Dimensions in mm			

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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