

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}	-6.0	V
Collector Current	I _C	-200	mA
Peak Collector Current	I _{CM}	-200	mA

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

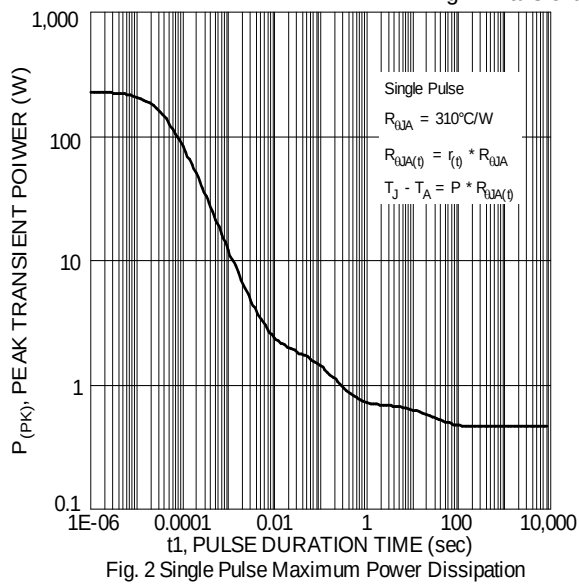
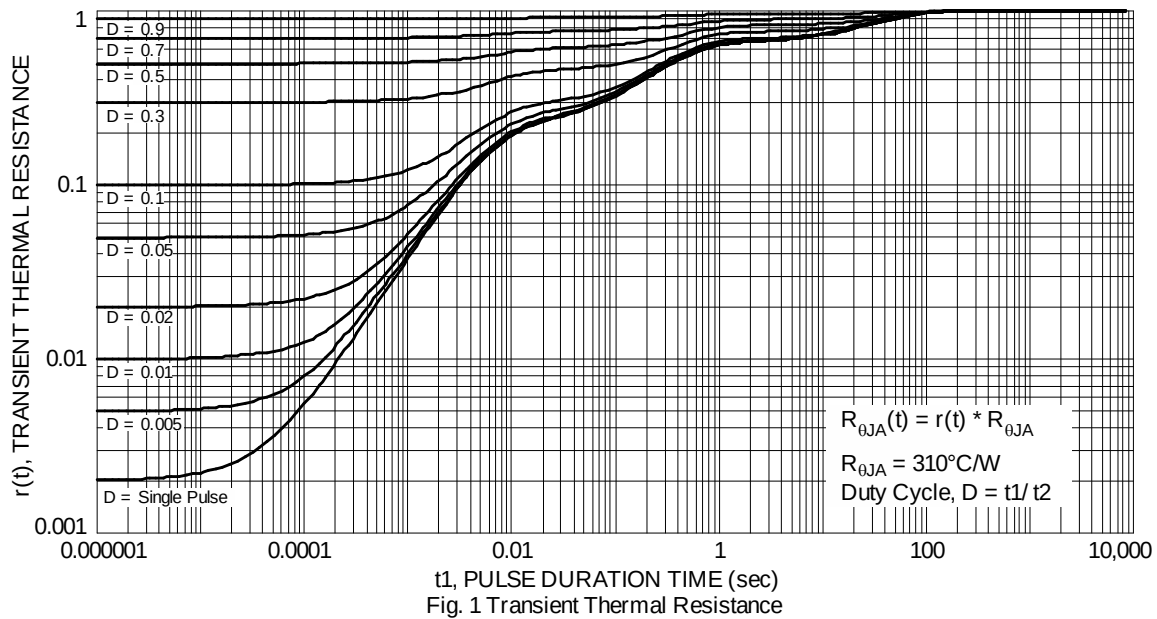
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	400	mW
		1000	
Thermal Resistance, Junction to Ambient	R _{θJA}	310	°C/W
		120	
Thermal Resistance, Junction to Lead	R _{θJL}	120	°C/W
Operating and Storage and Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	200	V	B

- Notes:
- For the device mounted on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady state condition. The entire exposed collector pad is attached to the heatsink.
 - Same as Note 5, except the exposed collector pad is mounted on 25mm x 25mm 2oz copper.
 - Thermal resistance from junction to solder-point (on the exposed collector pad).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics



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

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS					
Collector-Base Breakdown Voltage	BV _{CBO}	-40	—	V	I _C = -100μA, I _E = 0
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	-40	—	V	I _C = -10.0mA, I _B = 0
Emitter-Base Breakdown Voltage	BV _{EBO}	-6.0	—	V	I _E = -100μA, I _C = 0
Collector Cutoff Current	I _{CEX}	—	-50	nA	V _{CE} = -30V, V _{EB(OFF)} = -3.0V
	I _{CBO}	—	-50	nA	V _{CB} = -30V, I _E = 0
Base Cutoff Current	I _{BL}	—	-50	nA	V _{CE} = -30V, V _{EB(OFF)} = -3.0V
ON CHARACTERISTICS (Note 9)					
DC Current Gain	h _{FE}	60	—	—	I _C = -100μA, V _{CE} = -1.0V
		80	—		I _C = -1.0mA, V _{CE} = -1.0V
		100	300		I _C = -10mA, V _{CE} = -1.0V
		60	—		I _C = -50mA, V _{CE} = -1.0V
		30	—		I _C = -100mA, V _{CE} = -1.0V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	—	-0.25	V	I _C = -10mA, I _B = -1.0mA
		—	-0.40		I _C = -50mA, I _B = -5.0mA
Base-Emitter Saturation Voltage	V _{BE(sat)}	-0.65	-0.85	V	I _C = -10mA, I _B = -1.0mA
		—	-0.95		I _C = -50mA, I _B = -5.0mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C _{obo}	—	4.5	pF	V _{CB} = -5.0V, f = 1.0MHz, I _E = 0
Input Capacitance	C _{ibo}	—	10	pF	V _{EB} = -0.5V, f = 1.0MHz, I _C = 0
Input Impedance	h _{ie}	2.0	12	kΩ	V _{CE} = 10V, I _C = 1.0mA, f = 1.0kHz
Voltage Feedback Ratio	h _{re}	0.1	10	× 10 ⁻⁴	
Small Signal Current Gain	h _{fe}	100	400	—	
Output Admittance	h _{oe}	3.0	60	μS	
Current Gain-Bandwidth Product	f _T	300	—	MHz	V _{CE} = -20V, I _C = -10mA, f = 100MHz
SWITCHING CHARACTERISTICS					
Delay Time	t _d	—	35	ns	V _{CC} = -3.0V, I _C = -10mA, V _{BE(off)} = 0.5V, I _{B1} = -1.0mA
Rise Time	t _r	—	35	ns	
Storage Time	t _s	—	225	ns	V _{CC} = -3.0V, I _C = -10mA, I _{B1} = I _{B2} = -1.0mA
Fall Time	t _f	—	75	ns	

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

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

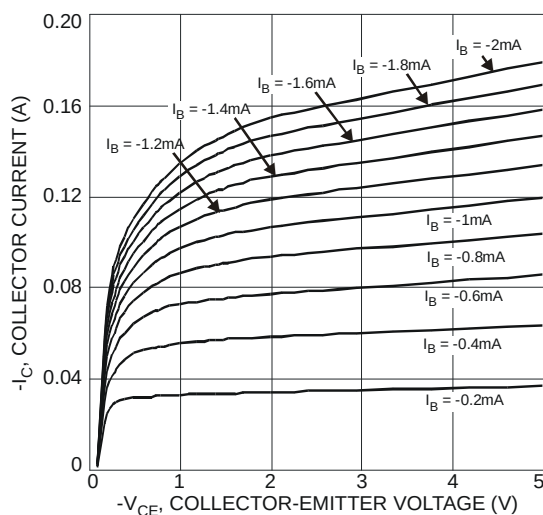


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

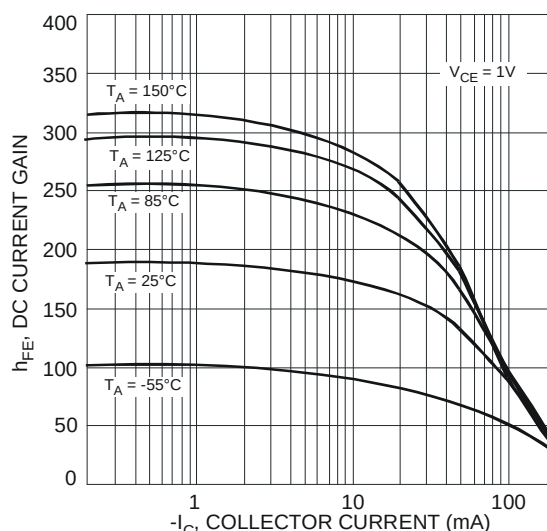


Fig. 5 Typical DC Current Gain vs. Collector Current

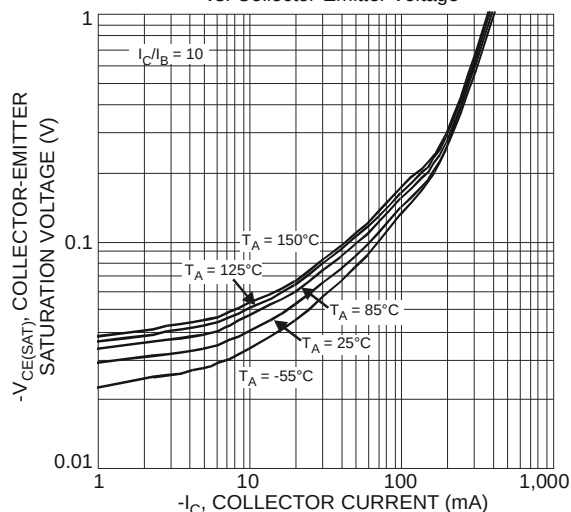


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

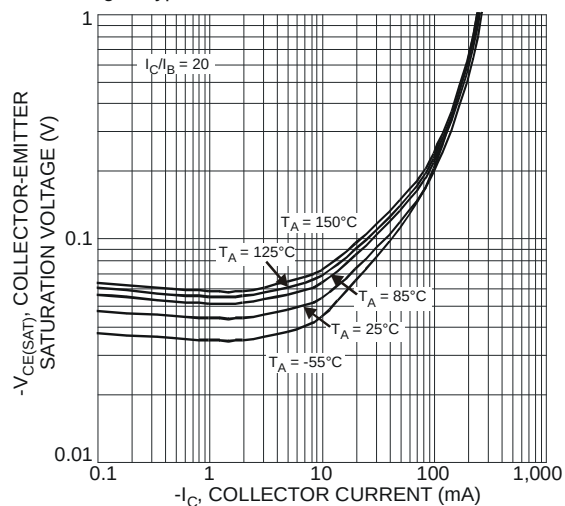


Fig. 7 Typical Collector-Emitter Saturation Voltage vs. Collector Current

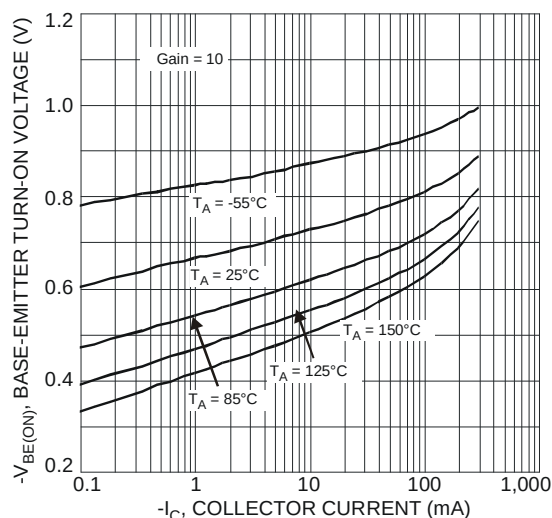


Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

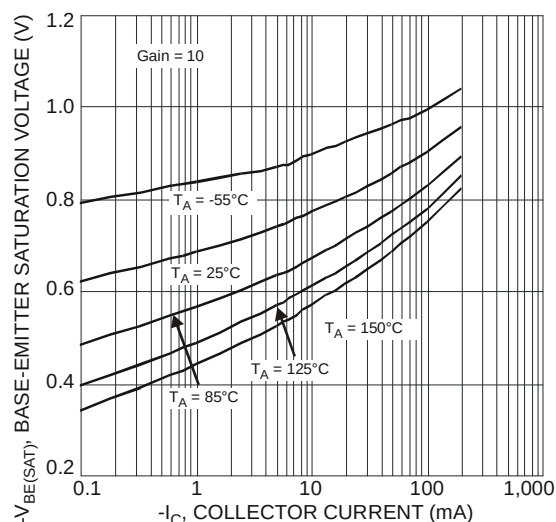
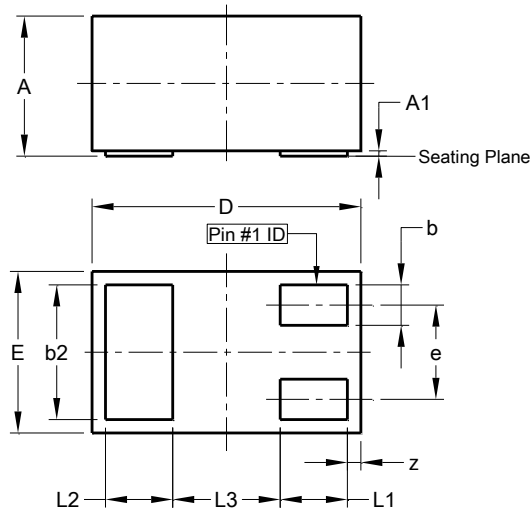


Fig. 9 Typical Base-Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions

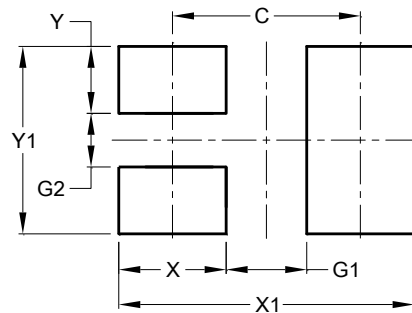
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



X1-DFN1006-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	-	-	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	-	-	0.40
z	0.02	0.08	0.05
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)
C	0.70
G1	0.30
G2	0.20
X	0.40
X1	1.10
Y	0.25
Y1	0.70

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