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}	-5.0	V
Collector Current – Continuous (Note 5)	I_C	-600	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	150	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Note: 5. Mounted on FR4 PC Board with minimum recommended pad layout.

Thermal Characteristics and Derating Information

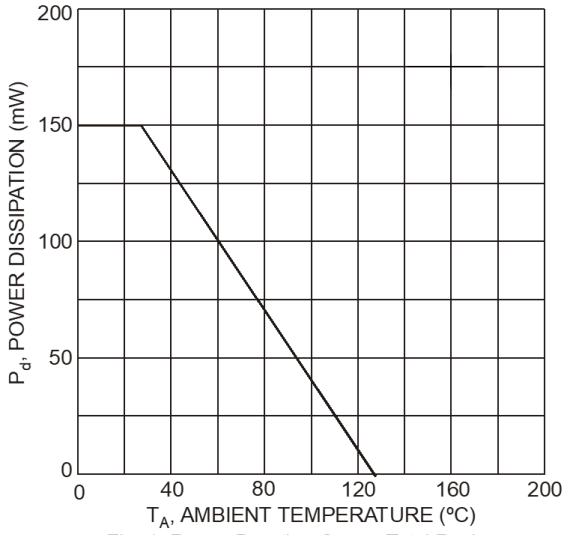


Fig. 1 Power Derating Curve, Total Package

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

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-40	—	V	I_C = -100µA, I_E = 0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-40	—	V	I_C = -1.0mA, I_B = 0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5.0	—	V	I_E = -100µA, I_C = 0
Collector Cutoff Current	I_{CEX}	—	-100	nA	V_{CE} = -35V, $V_{EB(OFF)}$ = -0.4V
Base Cutoff Current	I_{BL}	—	-100	nA	V_{CE} = -35V, $V_{EB(OFF)}$ = -0.4V
ON CHARACTERISTICS (Note 6)					
DC Current Gain	h_{FE}	30 60 100 100 20	— — — 300 —	—	I_C = -100µA, V_{CE} = -1.0V I_C = -1.0mA, V_{CE} = -1.0V I_C = -10mA, V_{CE} = -1.0V I_C = -150mA, V_{CE} = -2.0V I_C = -500mA, V_{CE} = -2.0V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-0.40 -0.75	V	I_C = -150mA, I_B = -15mA I_C = -500mA, I_B = -50mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	-0.75 —	-0.95 -1.30	V	I_C = -150mA, I_B = -15mA I_C = -500mA, I_B = -50mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{cb}	—	8.5	pF	V_{CB} = -10V, f = 1.0MHz, I_E = 0
Input Capacitance	C_{eb}	—	30	pF	V_{EB} = -0.5V, f = 1.0MHz, I_C = 0
Input Impedance	h_{ie}	1.5	15	kΩ	V_{CE} = -10V, I_C = -1.0mA, f = 1.0kHz
Voltage Feedback Ratio	h_{re}	0.1	8.0	x 10^{-4}	
Small Signal Current Gain	h_{fe}	60	500	—	
Output Admittance	h_{oe}	1.0	100	µS	
Current Gain-Bandwidth Product	f_T	200	—	MHz	V_{CE} = -10V, I_C = -20mA, f = 100MHz
SWITCHING CHARACTERISTICS					
Delay Time	t_d	—	15	ns	V_{CC} = -30V, I_C = -150mA, $V_{BE(off)}$ = -2.0V, I_{B1} = -15mA
Rise Time	t_r	—	20	ns	
Storage Time	t_s	—	225	ns	V_{CC} = -30V, I_C = -150mA, I_{B1} = I_{B2} = -15mA
Fall Time	t_f	—	30	ns	

Note: 6. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

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

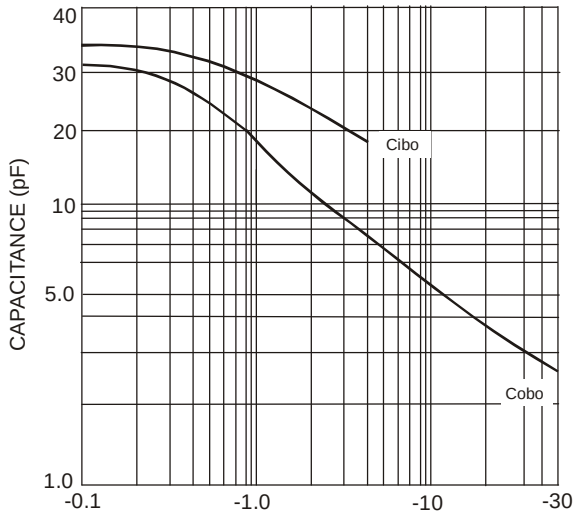


Fig. 2 Capacitances (Typical)

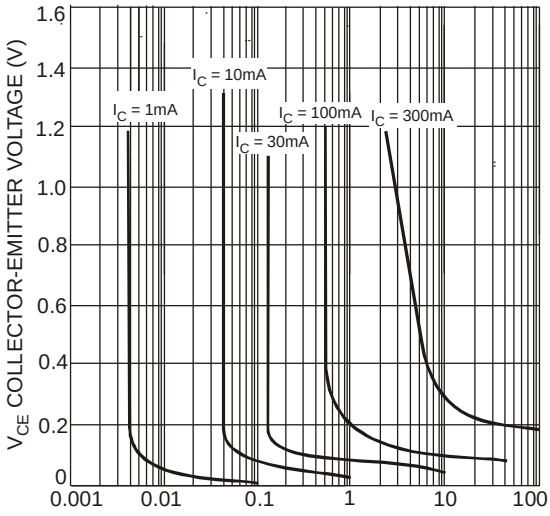


Fig. 3 Typical Collector Saturation Region

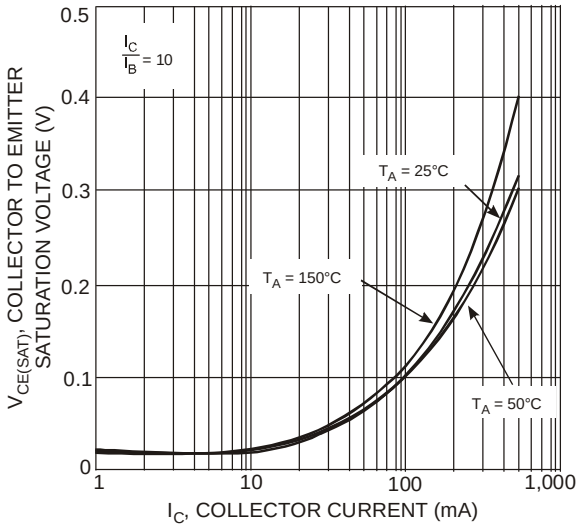


Fig. 4 Collector Emitter Saturation Voltage vs. Collector Current

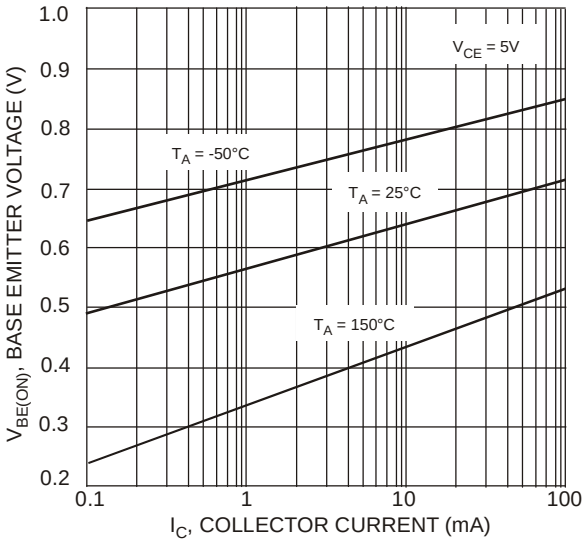


Fig. 5 Base-Emitter Voltage vs. Collector Current

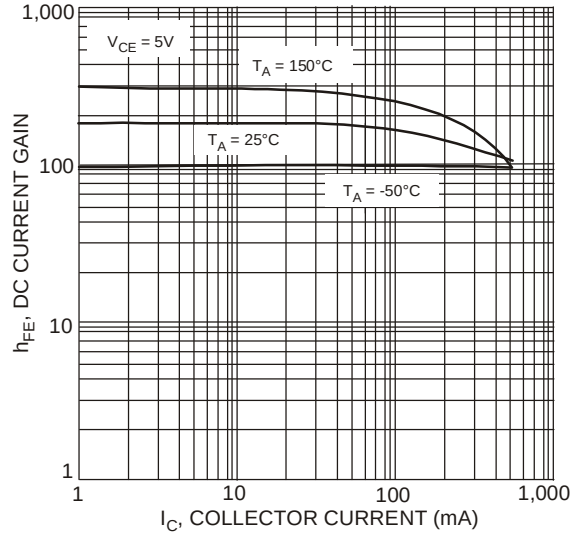


Fig. 6 DC Current Gain vs. Collector Current

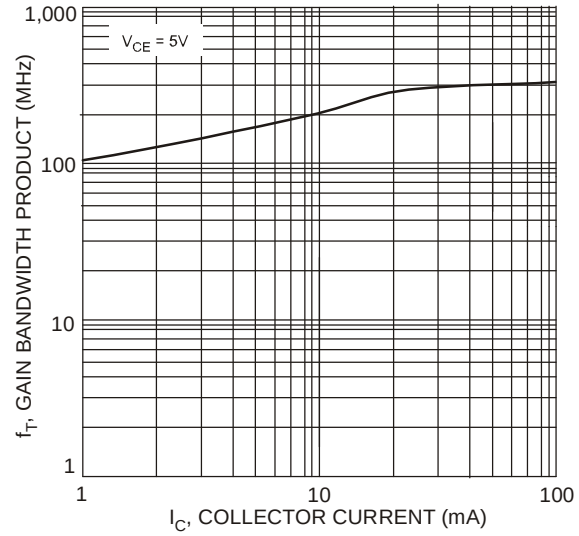
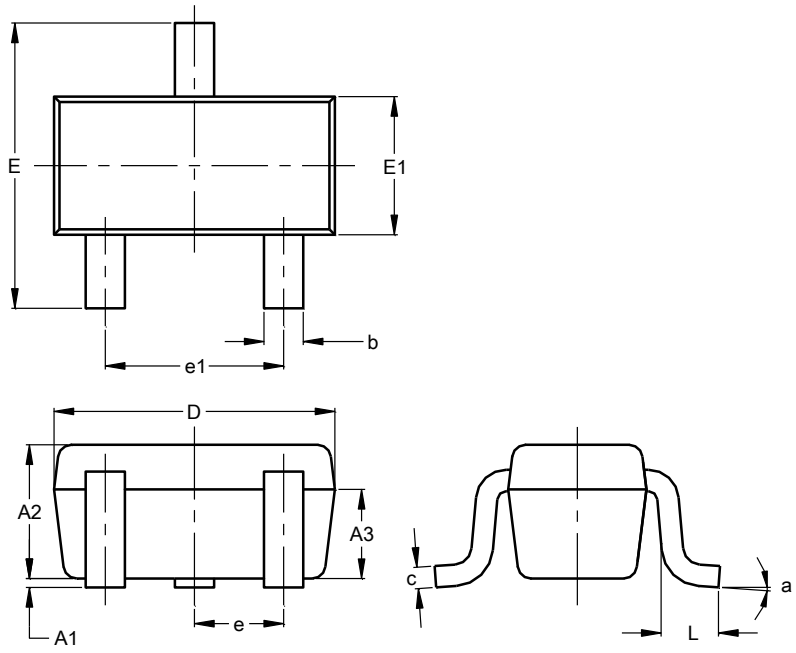


Fig. 7 Gain Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

SOT523

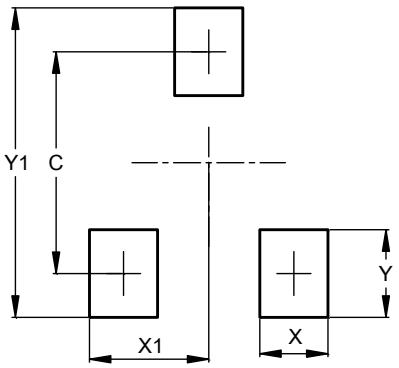


SOT523			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.60	0.80	0.75
A3	0.45	0.65	0.50
b	0.15	0.30	0.22
c	0.10	0.20	0.12
D	1.50	1.70	1.60
E	1.45	1.75	1.60
E1	0.75	0.85	0.80
e	0.50 BSC		
e1	0.90	1.10	1.00
L	0.20	0.40	0.33
a	0°	--	8°
All Dimensions in mm			

Suggested Pad Layout

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

SOT523



Dimensions	Value
C	1.29
X	0.40
X1	0.70
Y	0.51
Y1	1.80

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