

Features

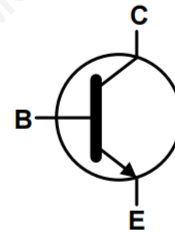
- $BV_{CEO} > 60V$
- $I_C = 1A$ High Continuous Collector Current
- $I_{CM} = 2A$ Peak Pulse Current
- $R_{CE(sat)} = 280m\Omega$ for a Low Equivalent On-Resistance
- Low Saturation Voltage $V_{CE(sat)} < 280mV$ @ 1A



SOT23

Mechanical Data

- Case: SOT23
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin Plated leads, Solderable per MIL-STD-202, Method 208⁽⁸⁾
- Weight: 0.008 grams (Approximate)



Device Symbol

Absolute Maximum Ratings (@ $T_A = +25^\circ C$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	1	A
Peak Pulse Collector Current	I_{CM}	2	A
Base Current	I_B	300	mA
Peak Base Current	I_{BM}	1	A

Thermal Characteristics (@ $T_A = +25^\circ C$, unless otherwise specified.)

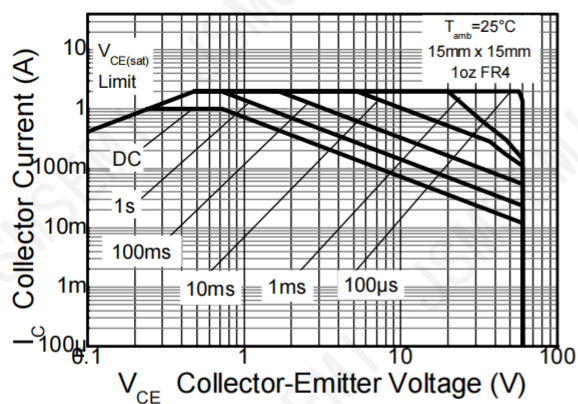
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	725	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	172	$^\circ C/W$
Thermal Resistance, Junction to Leads (Note 7)	$R_{\theta JL}$	79	$^\circ C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$

ESD Ratings (Note 8)

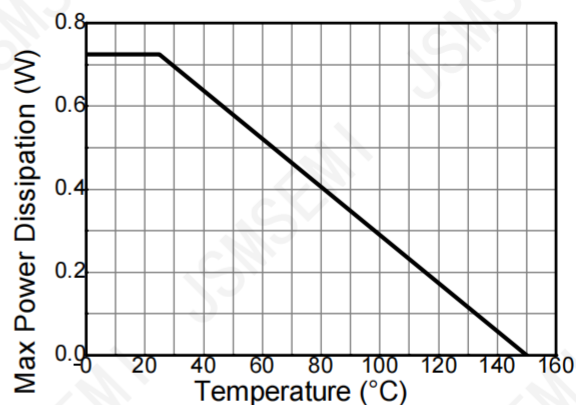
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
6. For a device mounted with the collector lead 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.
 7. Thermal resistance from junction to solder-point (at the end of collector lead).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

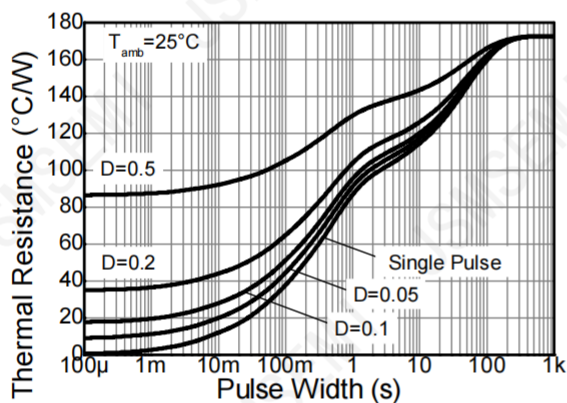
Thermal Characteristics and Derating Information



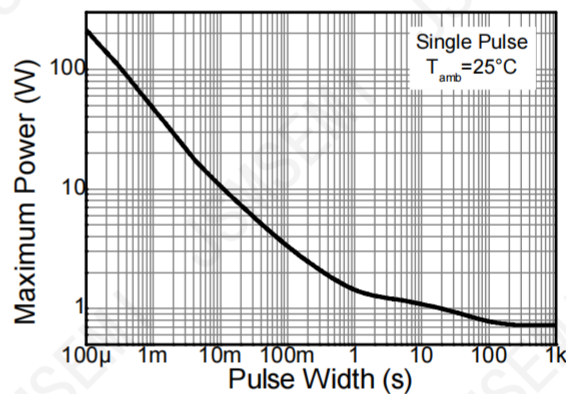
Safe operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BV_{CBO}	80	—	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	60	—	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	$I_E = 100\mu\text{A}$
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	$V_{CB} = 60\text{V}, I_E = 0$
		—	—	50	μA	$V_{CB} = 60\text{V}, I_E = 0, T_A = +150^\circ\text{C}$
Collector Cutoff Current	I_{CES}	—	—	100	nA	$V_{EB} = 60\text{V}, I_{BE} = 0$
Emitter-Base Cutoff Current	I_{EBO}	—	—	100	nA	$V_{EB} = 5\text{V}, I_C = 0$
DC Current Gain (Note 9)	h_{FE}	250	—	—	—	$V_{CE} = 5\text{V}, I_C = 1\text{mA}$
		200	—	—		$V_{CE} = 5\text{V}, I_C = 500\text{mA}$
		100	—	—		$V_{CE} = 5\text{V}, I_C = 1\text{A}$
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	—	—	115	mV	$I_C = 100\text{mA}, I_B = 1\text{mA}$
		—	—	150		$I_C = 500\text{mA}, I_B = 50\text{mA}$
		—	—	280		$I_C = 1\text{A}, I_B = 100\text{mA}$
Equivalent On-Resistance	$R_{CE(sat)}$	—	—	280	$\text{m}\Omega$	$I_E = 1\text{A}, I_B = 100\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	1.1	V	$I_C = 1\text{A}, I_B = 50\text{mA}$
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	—	—	0.9	V	$V_{CE} = 5\text{V}, I_C = 1\text{A}$
Transition Frequency	f_T	150	—	—	MHz	$V_{CE} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	—	10	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Turn-On Time	t_{on}	—	63	—	ns	$V_{CC} = 10\text{V}, I_C = 0.5\text{A}, I_{B1} = -I_{B2} = 25\text{mA}$
Delay Time	t_d	—	33	—	ns	
Rise Time	t_r	—	30	—	ns	
Turn-Off Time	t_{off}	—	420	—	ns	
Storage Time	t_s	—	380	—	ns	
Fall Time	t_f	—	40	—	ns	

 Note: 9. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

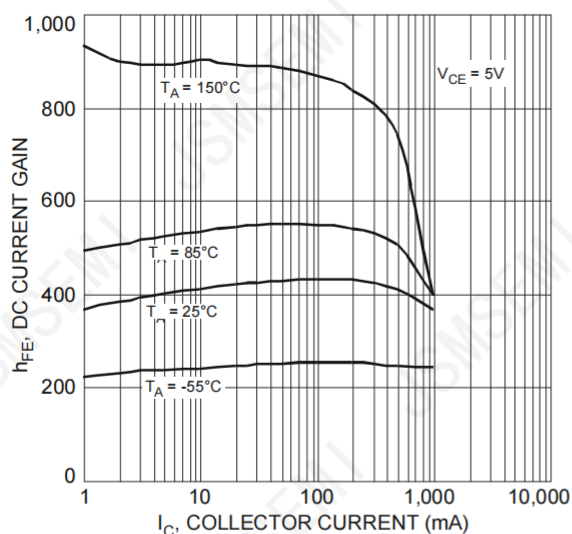


Fig. 5 Typical DC Current Gain vs. Collector Current

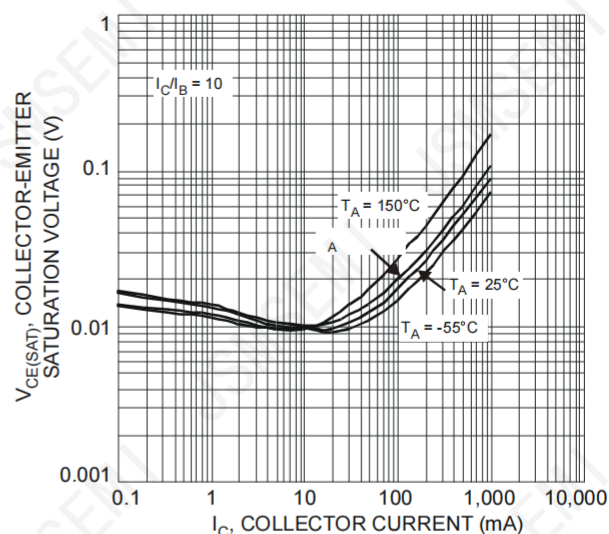


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

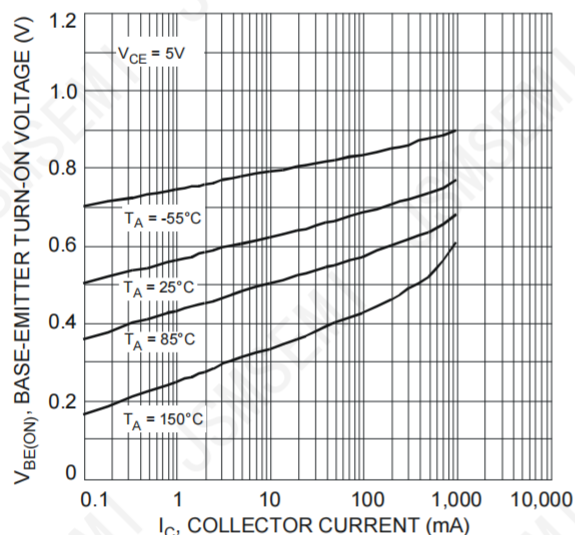


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

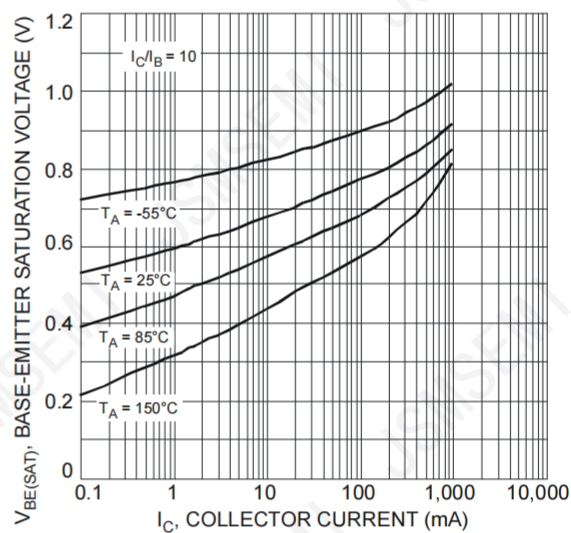


Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

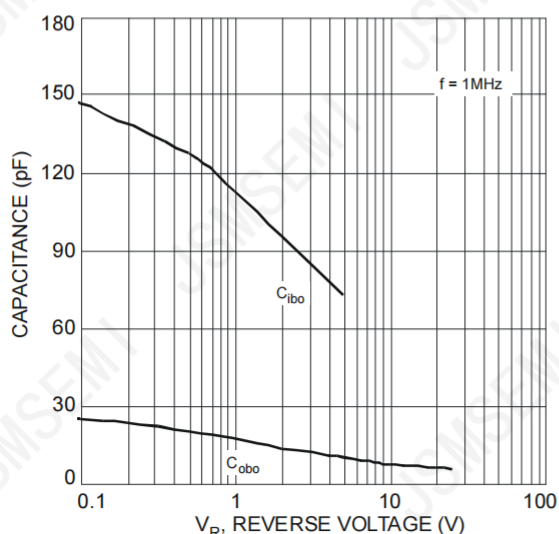
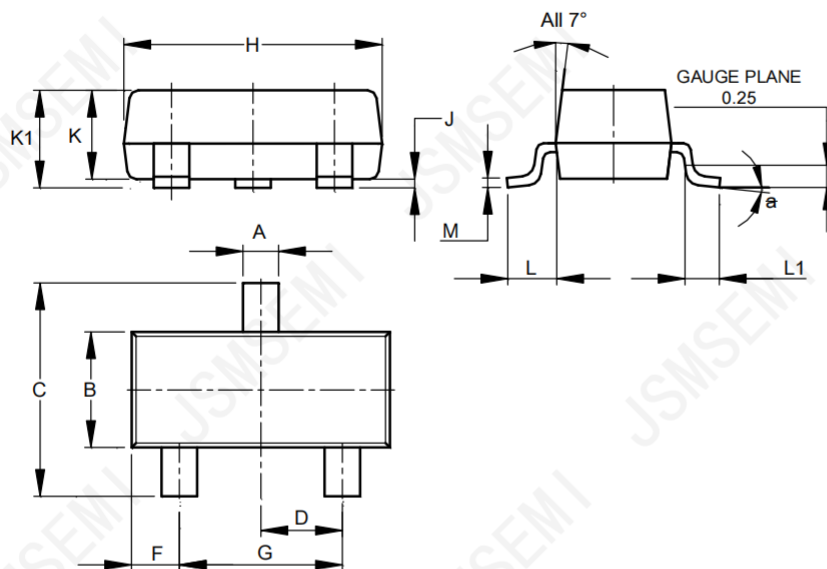


Fig. 9 Typical Capacitance Characteristics

Package Outline Dimensions

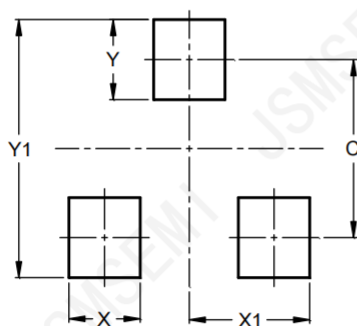
SOT23



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	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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