

MSKSEMI

SEMICONDUCTOR



ESD



TVS



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MOV



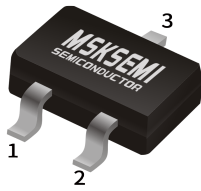
GDT



PLED

Product data sheet

www.msksemi.com


SOT - 23

1. BASE
2. EMITTER
3. COLLECTOR

FEATURES

- Switching Transistor

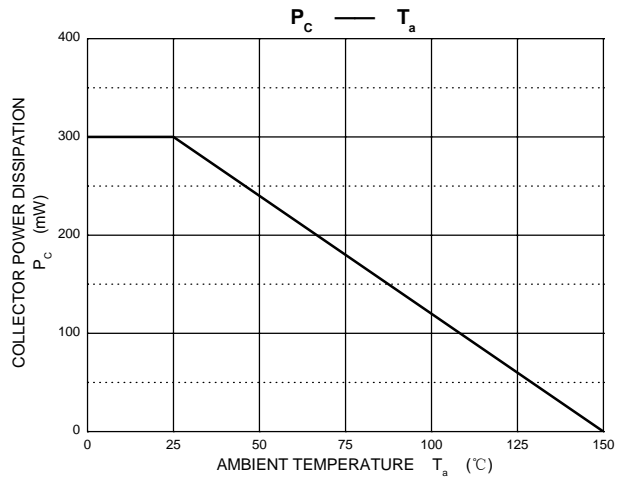
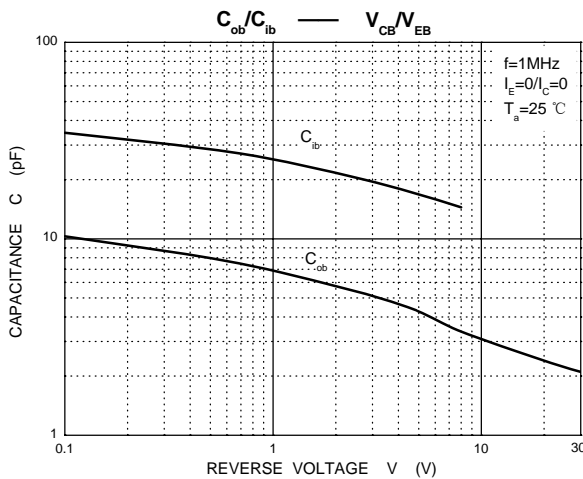
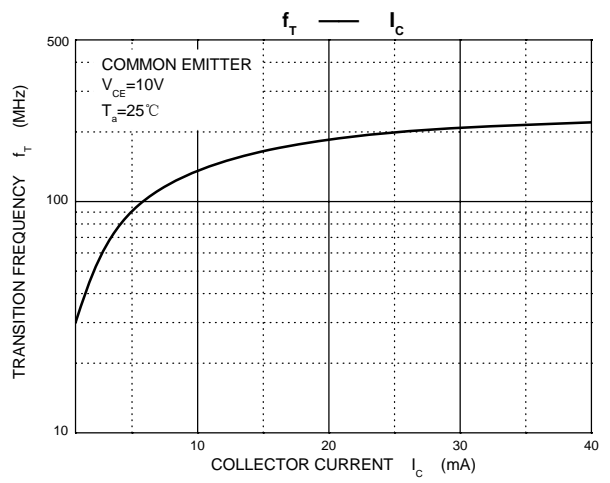
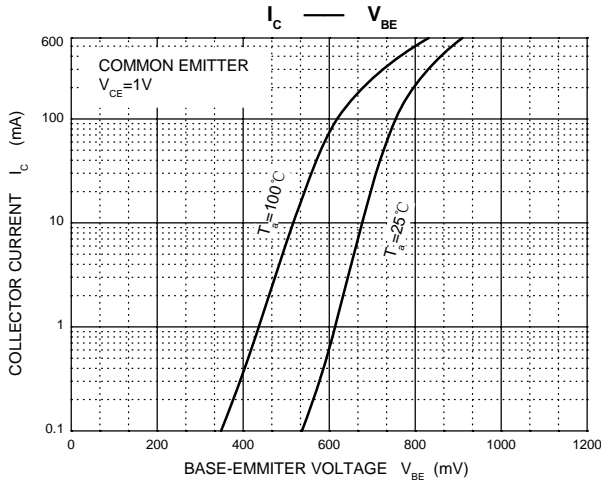
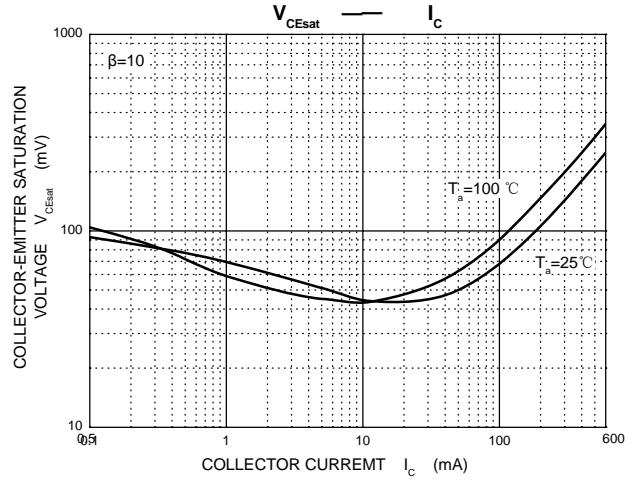
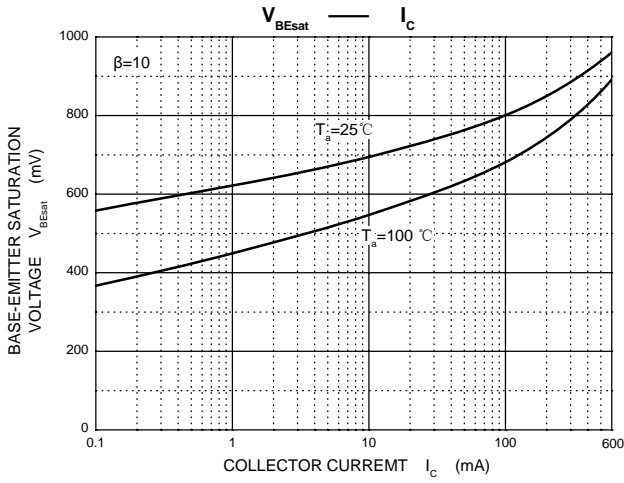
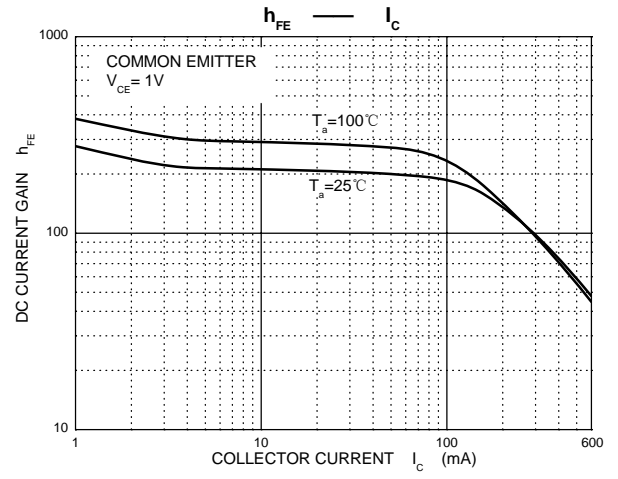
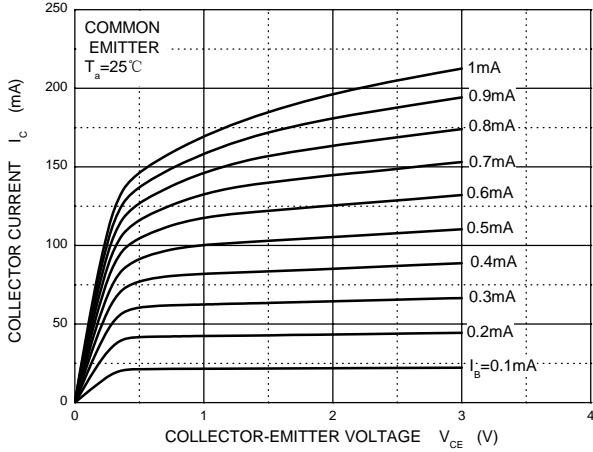
MARKING:2X
MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{CBO}	Collector-Base Voltage	60	V
V _{CEO}	Collector-Emitter Voltage	40	V
V _{EBO}	Emitter-Base Voltage	6	V
I _C	Collector Current	600	mA
P _C	Collector Power Dissipation	300	mW
R _{θJA}	Thermal Resistance From Junction To Ambient	417	°C/W
T _J , T _{stg}	Operation Junction and Storage Temperature Range	-55~+150	°C

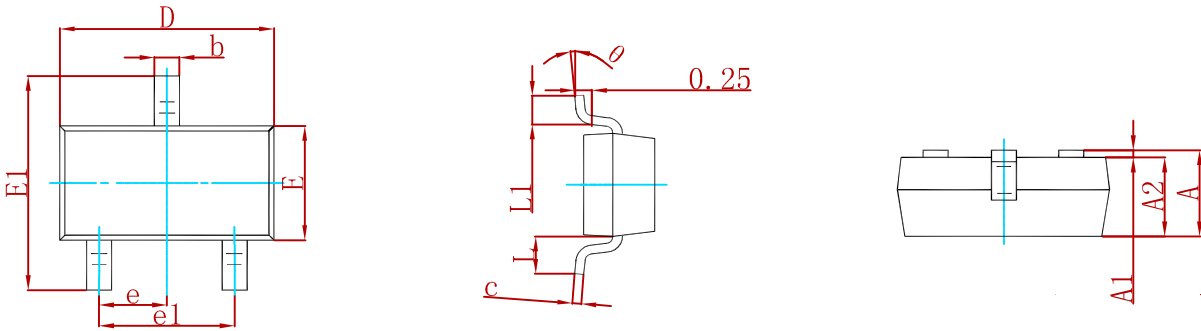
ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C =100 μ A, I _E =0	60			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C =1mA, I _B =0	40			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =100 μ A, I _C =0	6			V
Collector cut-off current	I _{CBO}	V _{CB} =50V, I _E =0			0.1	μ A
Collector cut-off current	I _{CEX}	V _{CE} =35V, V _{EB} =0.4V			0.1	μ A
Emitter cut-off current	I _{EBO}	V _{EB} =5V, I _C =0			0.1	μ A
DC current gain	h _{FE1}	V _{CE} =1V, I _C =0.1mA	20			
	h _{FE2}	V _{CE} =1V, I _C =1mA	40			
	h _{FE3}	V _{CE} =1V, I _C =10mA	80			
	h _{FE4}	V _{CE} =1V, I _C =150mA	100		300	
	h _{FE5}	V _{CE} =2V, I _C =500mA	40			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C =150mA, I _B =15mA			0.4	V
		I _C =500mA, I _B =50mA			0.75	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C =150mA, I _B =15mA			0.95	V
		I _C =500mA, I _B =50mA			1.2	V
Transition frequency	f _T	V _{CE} =10V, I _C =20mA, f =100MHz	250			MHz
Delay time	t _d	V _{CC} =30V, V _{BE(off)} =-2V			15	ns
Rise time	t _r	I _C =150mA, I _{B1} =15mA			20	ns
Storage time	t _s	V _{CC} =30V, I _C =150mA			225	ns
Fall time	t _f	I _{B1} =I _{B2} =15mA			60	ns

Static Characteristic

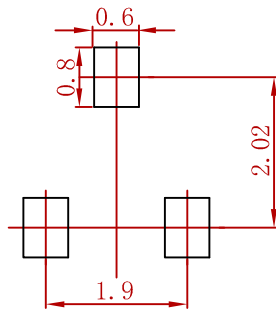


PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: ± 0.05mm.
 3. The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
MMBT4401	SOT-23	3000

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