

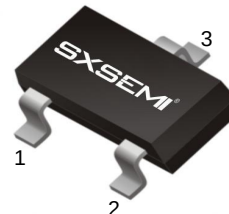
FEATURE

- | Switching transistor
- | Extremely low saturation voltage
- | Complementary NPN type: FMMT619

APPLICATION

- | Gate Driving MOSFETs and IGBTs
- | DC-DC converters
- | Charging circuit
- | Power switches

SOT -23



- 1. BASE
- 2. EMITTER
- 3. COLLECTOR

MARKING: 720

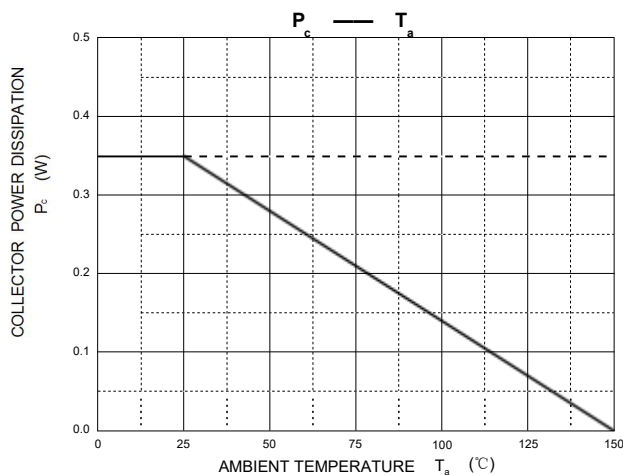
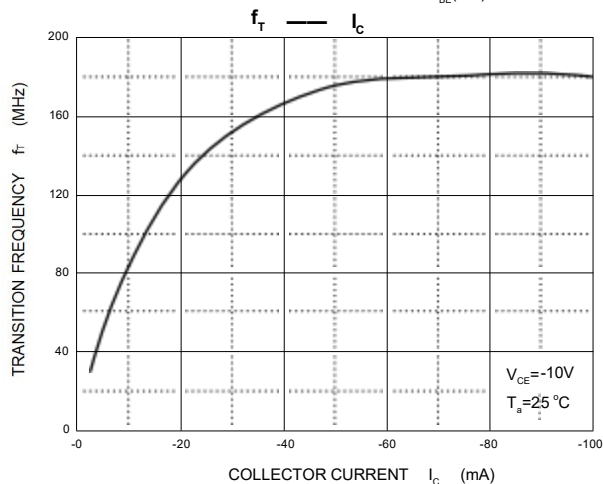
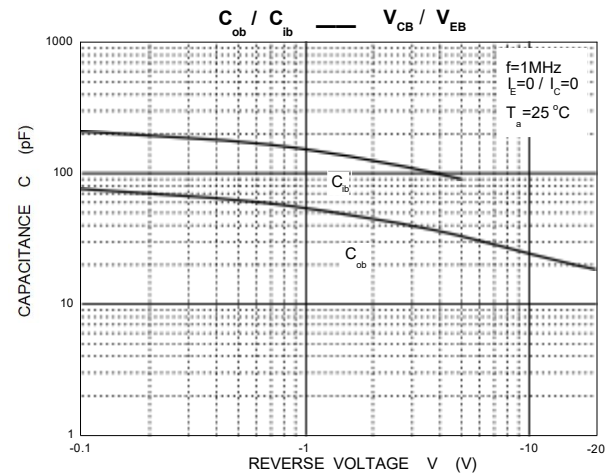
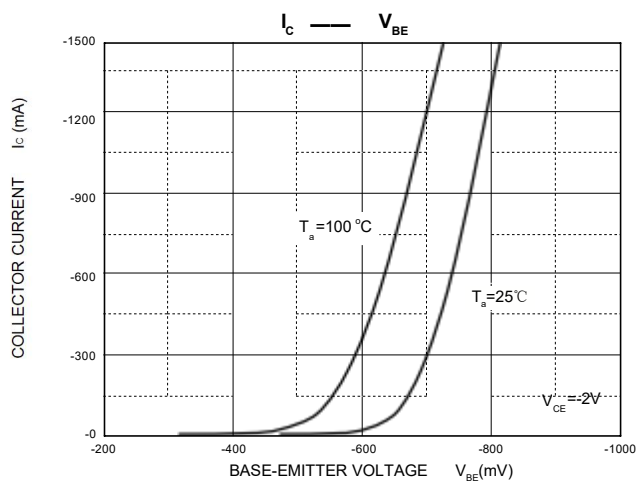
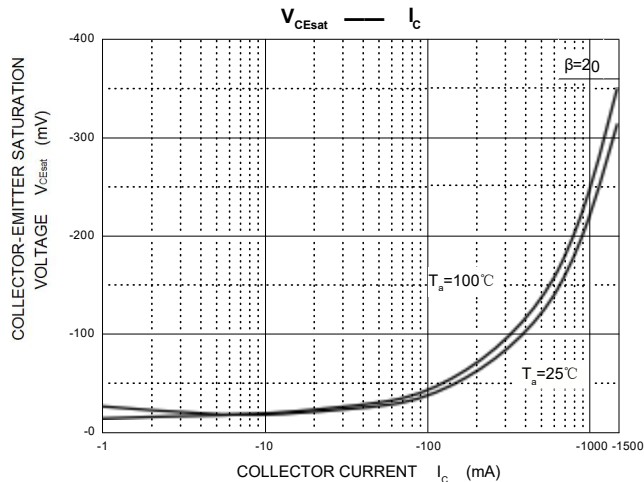
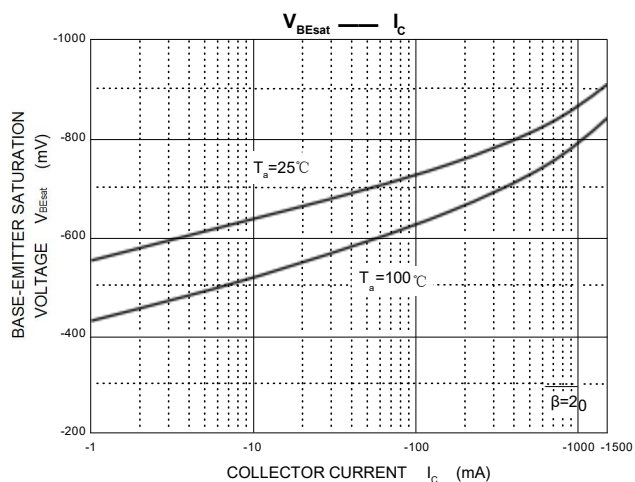
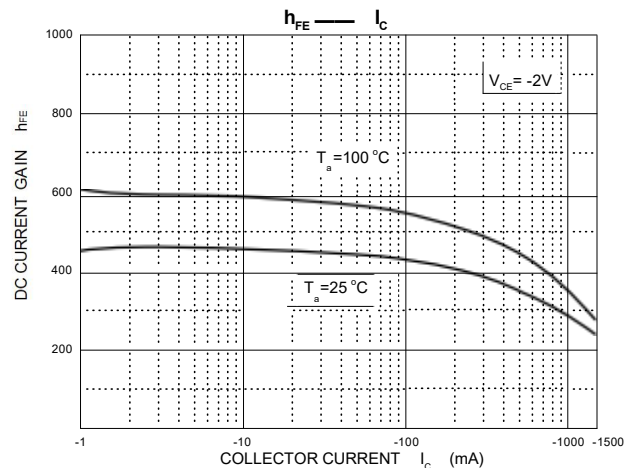
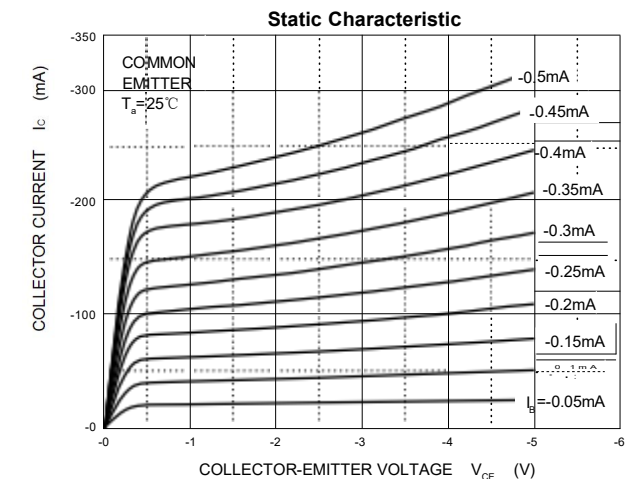
MAXIMUM RATINGS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CB0}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_B	Base Current	-0.5	A
I_C^*	Collector Current -Continuous	-1.5	A
I_{CM}	Peak Pulse Current	-4	A
P_C	Total Collector Dissipation	350	mW
R_{JA}	Thermal Resistance from Junction to Ambient	357	$^{\circ}\text{C}/\text{W}$
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	$^{\circ}\text{C}$

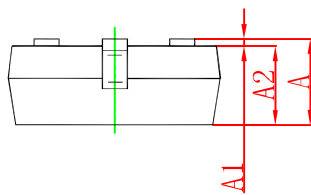
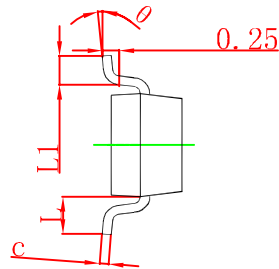
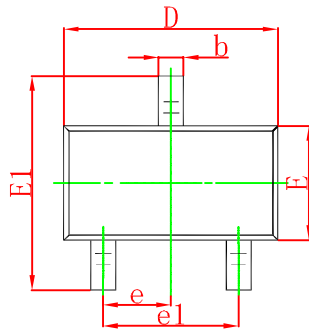
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -100\mu\text{A}$, $I_E = 0$	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}^*$	$I_C = -10\text{mA}$, $I_B = 0$	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -100\mu\text{A}$, $I_C = 0$	-5			V
Collector cut-off current	I_{CBO}	$V_{CB} = -35\text{V}$, $I_E = 0$			-0.1	μA
Collector cut-off current	I_{CES}	$V_{CE} = -35\text{V}$, $V_{BE} = 0$			-0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -4\text{V}$, $I_C = 0$			-0.1	μA
DC current gain	$h_{FE(1)}^*$	$V_{CE} = -2\text{V}$, $I_C = -10\text{mA}$	300			
	$h_{FE(2)}^*$	$V_{CE} = -2\text{V}$, $I_C = -100\text{mA}$	300			
	$h_{FE(3)}^*$	$V_{CE} = -2\text{V}$, $I_C = -1\text{A}$	180			
	$h_{FE(4)}^*$	$V_{CE} = -2\text{V}$, $I_C = -1.5\text{A}$	60			
	$h_{FE(5)}^*$	$V_{CE} = -2\text{V}$, $I_C = -3\text{A}$	12			
Collector-emitter saturation voltage	$V_{CE(sat) (1)}^*$	$I_C = -0.1\text{A}$, $I_B = -10\text{mA}$			-40	mV
	$V_{CE(sat) (2)}^*$	$I_C = -1\text{A}$, $I_B = -50\text{mA}$			-220	mV
	$V_{CE(sat) (3)}^*$	$I_C = -1.5\text{A}$, $I_B = -100\text{mA}$			-330	mV
Base-emitter saturation voltage	$V_{BE(sat)}^*$	$I_C = -1.5\text{A}$, $I_B = -75\text{mA}$			-1	V
Base-emitter voltage	$V_{BE(on)}^*$	$V_{CE} = -2\text{V}$, $I_C = -1.5\text{A}$			-1	V
Transition frequency	f_T	$V_{CE} = -10\text{V}$, $I_C = -50\text{mA}$, $f = 100\text{MHz}$	150			MHz
Collector output capacitance	C_{ob}	$V_{CB} = -10\text{V}$, $f = 1\text{MHz}$			25	pF
Turn-on Time	$t_{(on)}$	$V_{CC} = -15\text{V}$, $I_C = -0.75\text{A}$, $I_{B1} = I_{B2} = -15\text{mA}$		40		ns
Turn-off Time	$t_{(off)}$			435		ns

Typical Characteristics

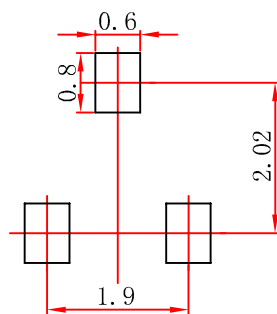


SOT-23 Package Outline Dimensions



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°

SOT-23 Suggested Pad Layout



- Note:
1. Controlling dimension in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.