

# MSKSEMI

SEMICONDUCTOR



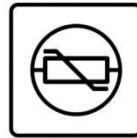
ESD



TVS



TSS



MOV



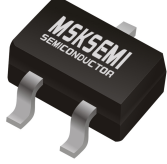
GDT



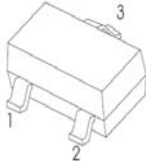
PLED

Product data sheet

**FMMT619** TRANSISTOR (NPN)



SOT - 23



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

**MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	50	V
V <sub>CEO</sub>	Collector-Emitter Voltage	50	V
V <sub>EBO</sub>	Emitter-Base Voltage	5	V
I <sub>C</sub>	Collector Current -Continuous	2	A
P <sub>C</sub>	Power Dissipation	0.35	W
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient	357	°C/W
P <sub>CM</sub>	Maximum Power Dissipation (note 1)	0.625	W
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient (note 1)	200	°C/W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55~+150	°C

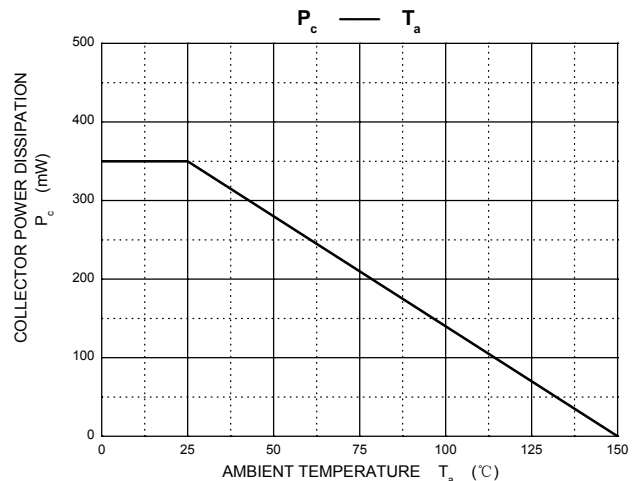
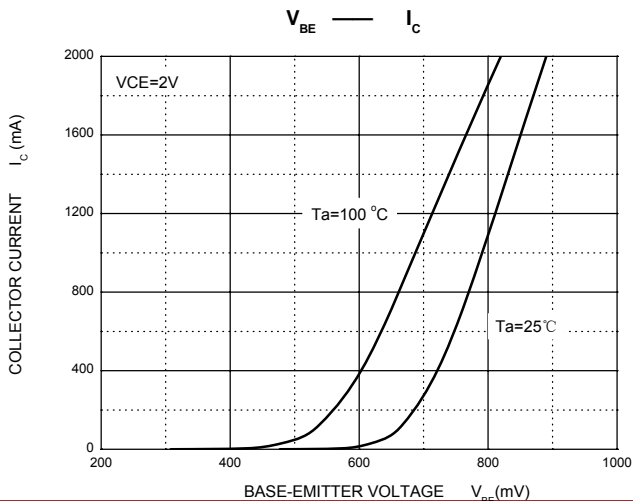
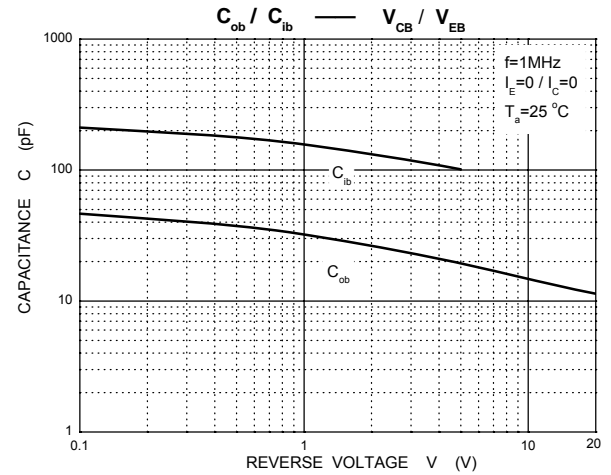
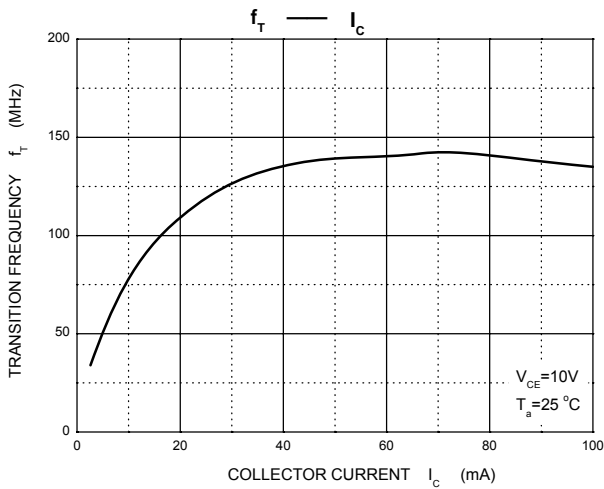
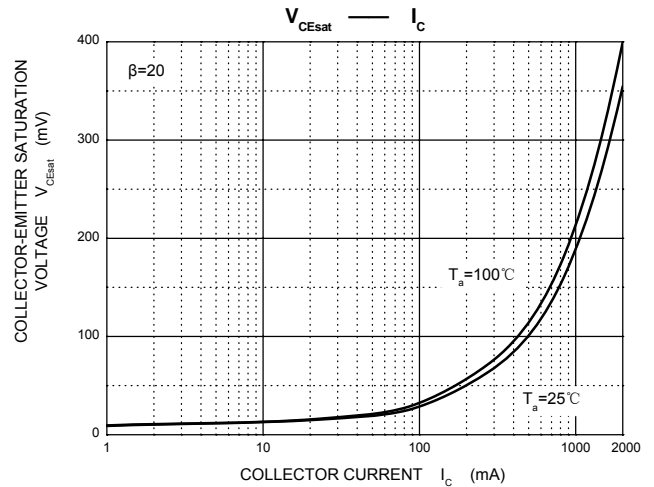
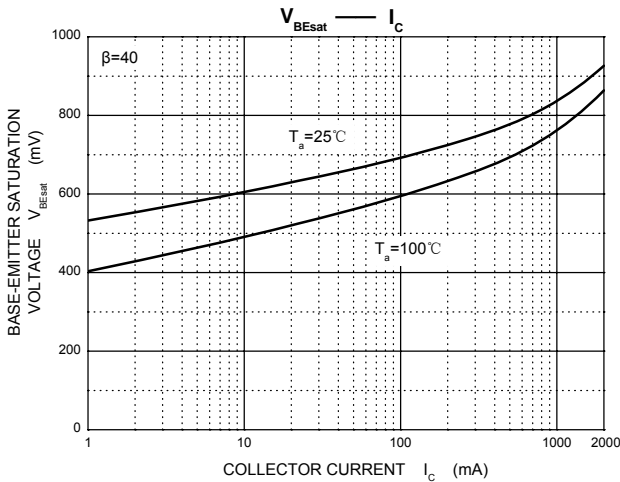
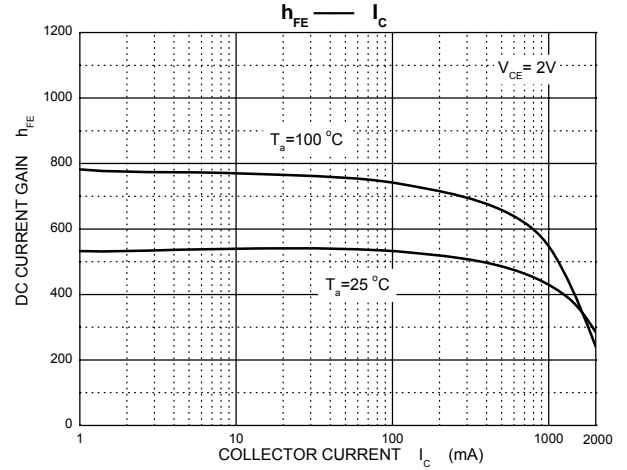
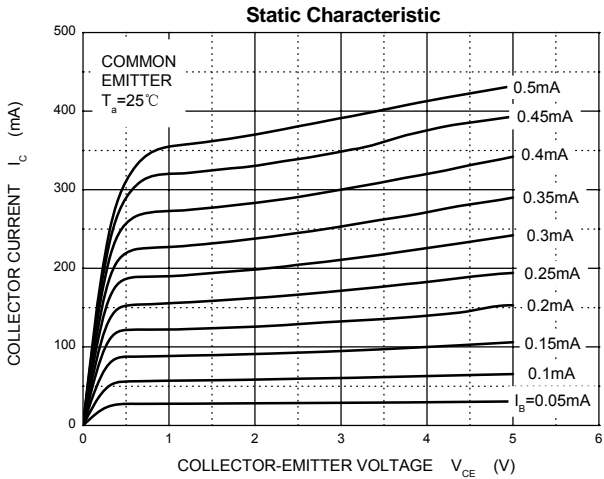
**MARKING:619**

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

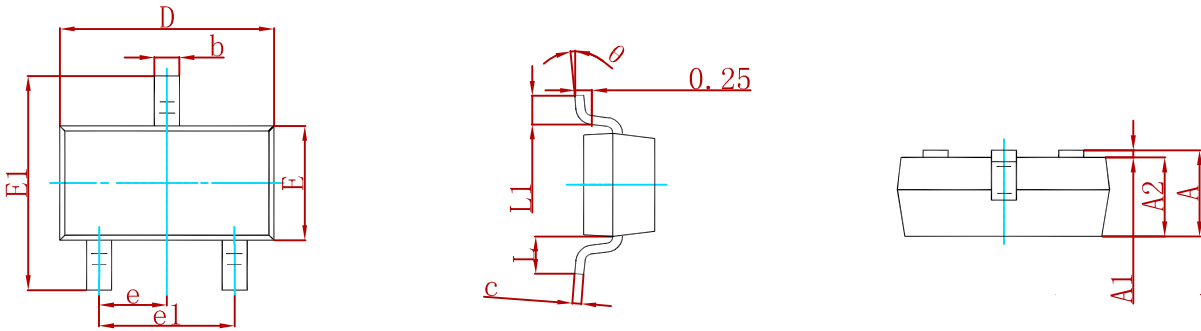
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =100μA, I <sub>E</sub> =0	50			V
Collector-emitter breakdown voltage (note 2)	V <sub>(BR)CEO</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0	50			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =100μA, I <sub>C</sub> =0	5			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =40V, I <sub>E</sub> =0			100	nA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =4V, I <sub>C</sub> =0			100	nA
DC current gain (note 2)	h <sub>FE(1)</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =10mA	200			
	h <sub>FE(2)</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =0.2A	300			
	h <sub>FE(3)</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =1A	200			
	h <sub>FE(4)</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =2A	100			
	h <sub>FE(5)</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =6A		40		
Collector-emitter saturation voltage (note 2)	V <sub>CE(sat)1</sub>	I <sub>C</sub> =0.1A, I <sub>B</sub> =10mA			20	mV
	V <sub>CE(sat)2</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =10mA			200	mV
	V <sub>CE(sat)3</sub>	I <sub>C</sub> =2A, I <sub>B</sub> =F∞0mA			220	mV
Base-emitter saturation voltage (note 2)	V <sub>BE(sat)</sub>	I <sub>C</sub> =2A, I <sub>B</sub> =50mA			1	V
Base-emitter on voltage (note 2)	V <sub>BE(on)</sub>	I <sub>C</sub> =2A, V <sub>CE</sub> =2V			1	V
Output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz			20	pF
Turn-on time	t <sub>(on)</sub>	V <sub>CC</sub> =10V, I <sub>C</sub> =1A, I <sub>B1</sub> =-I <sub>B2</sub> =10mA		170		ns
Turn-off time	t <sub>(off)</sub>			750		ns
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =50mA, f=100MHz	100			MHz

**Notes :**

- 1. Maximum power dissipation is calculated assuming that the device is mounted on a ceramic substrate measuring 15x15x0.6mm.
- 2. Pulse test: Pulse width≤300μs, duty cycle≤2.0%.

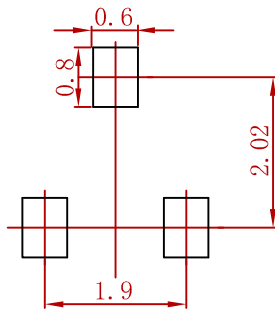


**PACKAGE MECHANICAL DATA**



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
FMMT619	SOT-23	3000

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