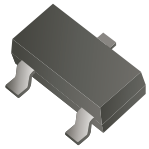
General Purpose Transistor

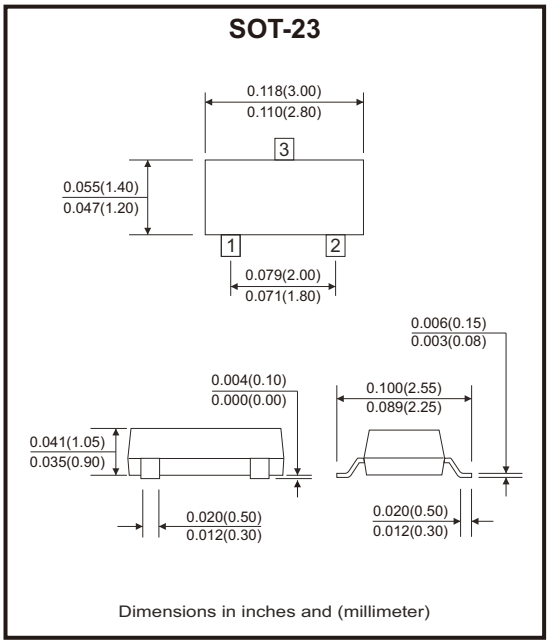
FMMT619-HF (NPN)

RoHS Device
Halogen Free



Features

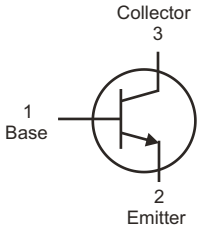
- Low saturation voltage.



Mechanical Data

- Case: SOT-23, molded plastic.
- Mounting position: Any.

Circuit Diagram



Maximum Ratings (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current-continuous	I_C	2	A
Power dissipation	P_C	350	mW
Thermal resistance from junction to ambient	$R_{\theta JA}$	357	°C/W
Maximum power dissipation (Note 1)	P_{CM}	625	mW
Thermal resistance from junction to ambient (Note 1)	$R_{\theta JA}$	200	°C/W
Operation junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = 100μA, I_E = 0	50			V
Collector-emitter breakdown voltage (Note 2)	$V_{(BR)CEO}$	I_C = 10mA, I_B = 0	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	5			V
Collector cut-off current	I_{CBO}	V_{CB} = 40V, I_E = 0			100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = 4V, I_C = 0			100	nA
DC current gain (Note 2)	$h_{FE(1)}$	V_{CE} = 2V, I_C = 10mA	200			
	$h_{FE(2)}$	V_{CE} = 2V, I_C = 0.2A	300			
	$h_{FE(3)}$	V_{CE} = 2V, I_C = 1A	200			
	$h_{FE(4)}$	V_{CE} = 2V, I_C = 2A	100			
	$h_{FE(5)}$	V_{CE} = 2V, I_C = 6A		40		
Collector-emitter saturation voltage (Note 2)	$V_{CE(sat)1}$	I_C = 0.1A, I_B = 10mA			20	mV
	$V_{CE(sat)2}$	I_C = 1A, I_B = 10mA			200	mV
	$V_{CE(sat)3}$	I_C = 2A, I_B = 100mA			220	mV
Base-emitter saturation voltage (Note 2)	$V_{BE(sat)}$	I_C = 2A, I_B = 50mA			1	V
Base-emitter on voltage (Note 2)	$V_{BE(on)}$	I_C = 2A, V_{CE} = 2V			1	V
Output capacitance	C_{ob}	V_{CB} = 10V, f = 1MHz			20	pF
Turn-on time	$t_{(on)}$	V_{CC} = 10V, I_C = 1A I_{B1} = -I_{B2} = 10mA		170		nS
Turn-off time	$t_{(off)}$			750		nS
Transition frequency	f_T	V_{CE} = 10V, I_C = 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%.

Rating and Characteristic Curves (FMMT619-HF)

Fig.1 - Static Characteristic

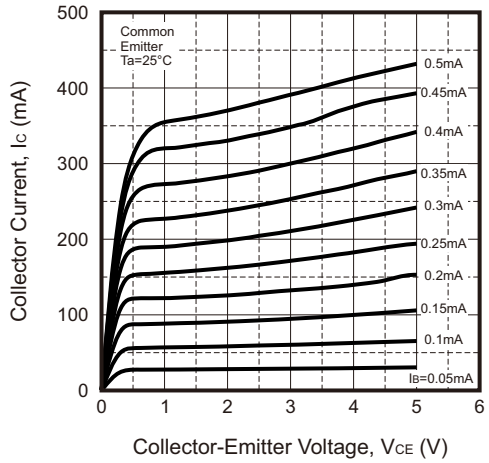


Fig.2 - h_{FE} — I_C

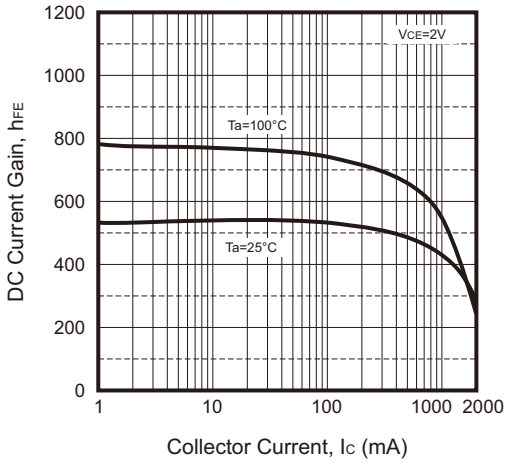


Fig.3 - V_{BEsat} — I_C

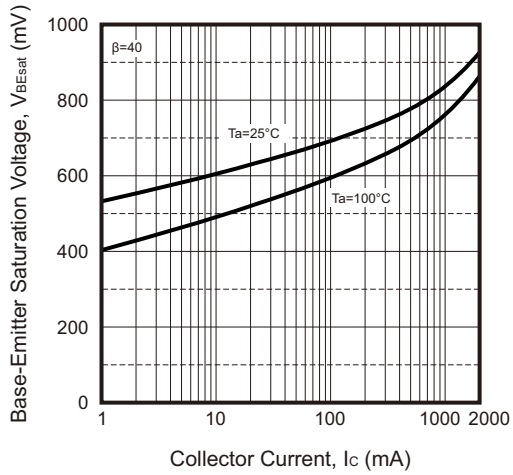


Fig.4 - V_{CEsat} — I_C

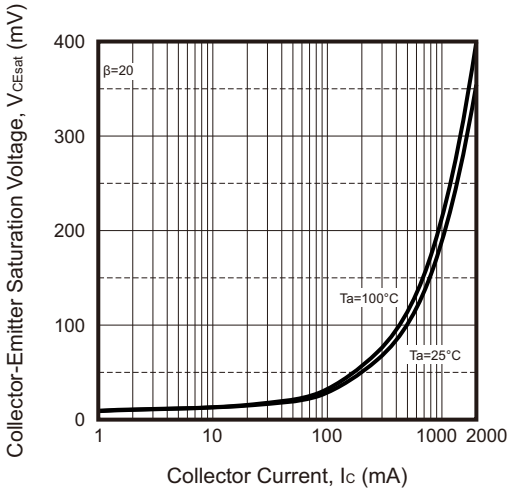


Fig.5 - f_T — I_C

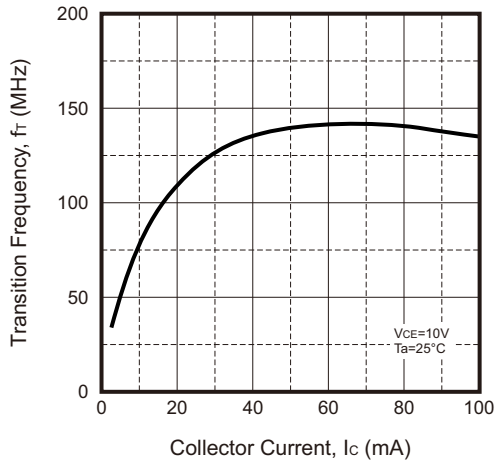
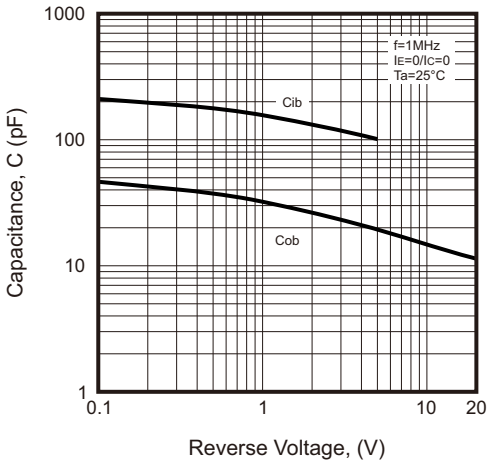


Fig.6 - C_{ob}/C_{ib} — V_{CB}/V_{EB}



Rating and Characteristic Curves (FMMT619-HF)

Fig.7 - V_{BE} — I_C

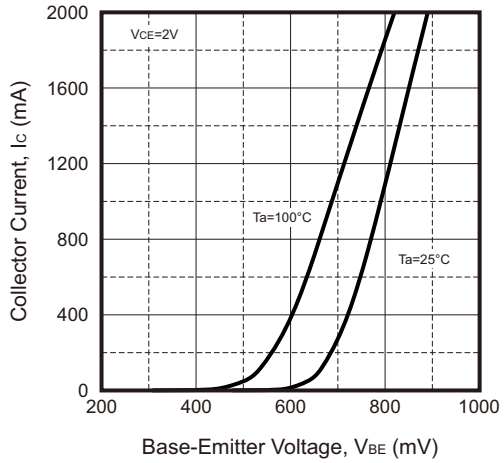
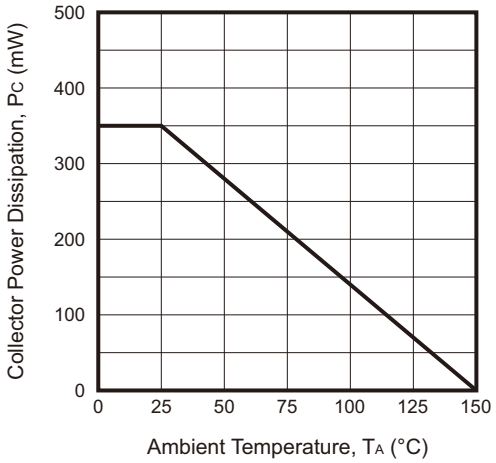
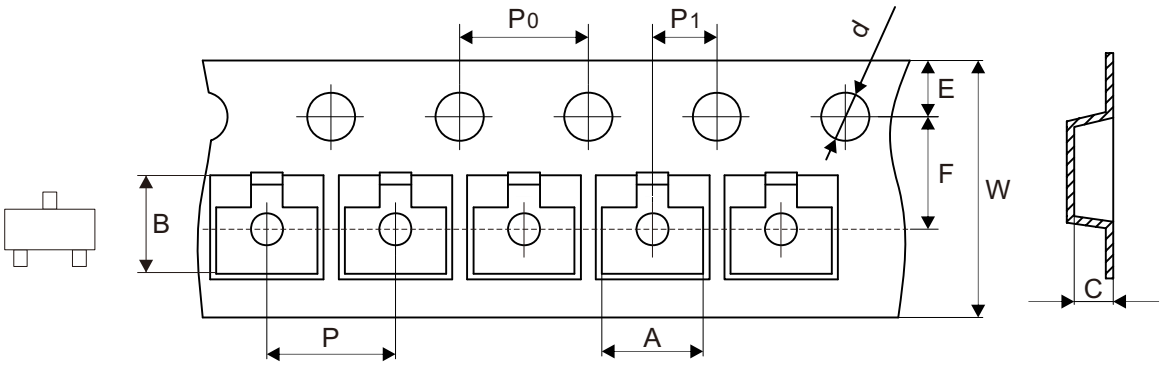
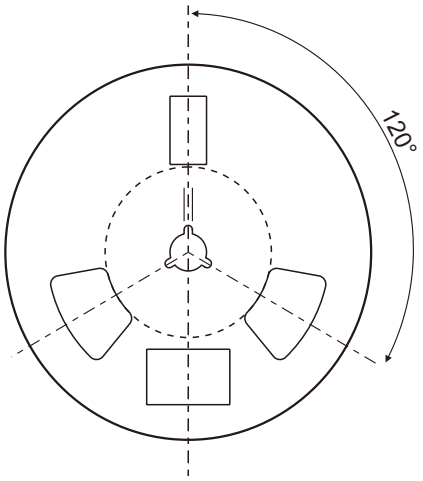


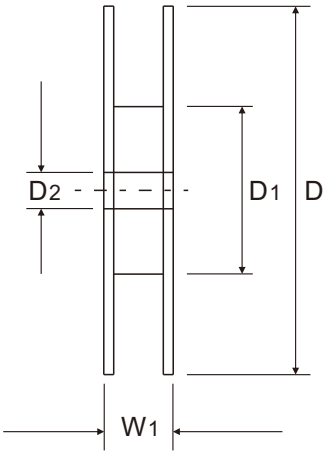
Fig.8 - P_C — T_A

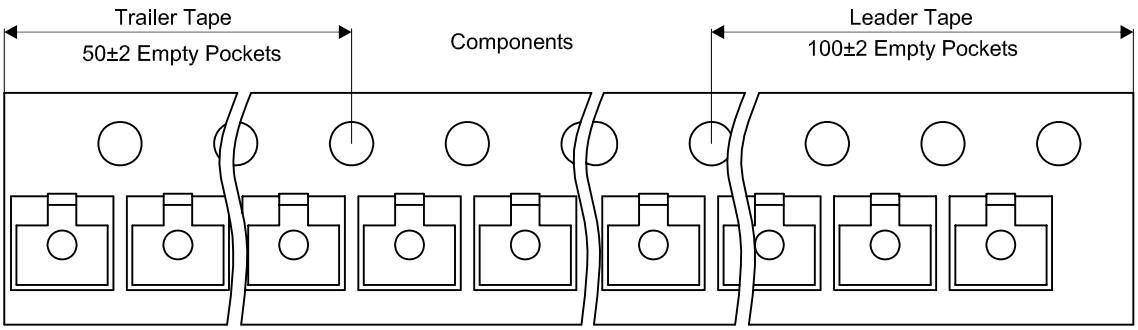


Reel Taping Specification







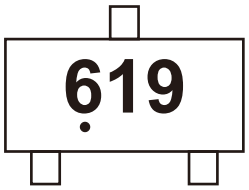


	SYMBOL	A	B	C	d	D	D1	D2
SOT-23	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

	SYMBOL	E	F	P	P0	P1	W	W1
SOT-23	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 − 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 − 0.004	0.484 ± 0.039

Marking Code

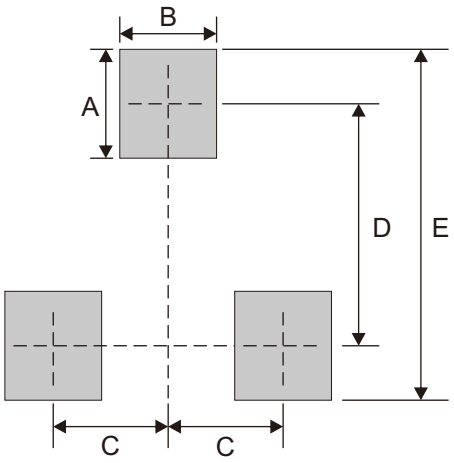
Part Number	Marking Code
FMMT619-HF	619



Solid dot = Control code

Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	0.95	0.037
D	2.00	0.079
E	2.90	0.114



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23	3,000	7