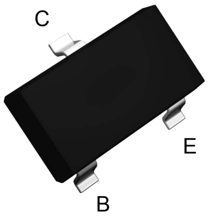
GOOD-ARK
SEMICONDUCTOR

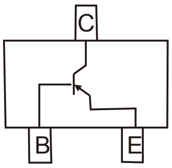
GSFMMT720
PNP Transistor

Features

- Switching transistor
- Extremely low saturation voltage
- Complementary NPN type: MMBT619



SOT-23



Schematic Diagram

Applications

- Gate driving MOSFETs and IGBTs
- DC-DC converters
- Charging circuit
- Power switches

Absolute Maximum Ratings (T$_A$=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Base Current	I_B	-0.5	A
Collector Current-Continuous[1]	I_C	-1.5	A
Peak Pulse Current	I_{CM}	-4	A
Total Collector Dissipation	P_C	350	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	°C/W
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=-100μA, I_E=0	-40	-	-	V
Collector-Emitter Breakdown Voltage[1]	$V_{(BR)CEO}$	I_C=-10mA, I_B=0	-40	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=-100μA, I_C=0	-5	-	-	V
Collector Cut-Off Current	I_{CBO}	V_{CB}=-35V, I_E=0	-	-	-0.1	μA
Collector Cut-Off Current	I_{CES}	V_{CE}=-35V, V_{BE}=0	-	-	-0.1	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=-4V, I_C=0	-	-	-0.1	μA
DC Current Gain[1]	$h_{FE(1)}$	V_{CE}=-2V, I_C=-10mA	300	-	-	-
	$h_{FE(2)}$	V_{CE}=-2V, I_C=-100mA	300	-	-	-
	$h_{FE(3)}$	V_{CE}=-2V, I_C=-1A	180	-	-	-
	$h_{FE(4)}$	V_{CE}=-2V, I_C=-1.5A	60	-	-	-
	$h_{FE(5)}$	V_{CE}=-2V, I_C=-3A	12	-	-	-
Collector-Emitter Saturation Voltage[1]	$V_{CE(sat)(1)}$	I_C=-0.1A, I_B=-10mA	-	-	-40	mV
	$V_{CE(sat)(2)}$	I_C=-1A, I_B=-50mA	-	-	-220	mV
	$V_{CE(sat)(3)}$	I_C=-1.5A, I_B=-100mA	-	-	-330	mV
Base-Emitter Saturation Voltage[1]	$V_{BE(sat)}$	I_C=-1.5A, I_B=-75mA	-	-	-1	V
Base-Emitter Voltage[1]	$V_{BE(on)}$	V_{CE}=-2V, I_C=-1.5A	-	-	-1	V
Transition Frequency	f_T	V_{CE}=-10V, I_C=-50mA, f=100MHz	150	-	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=-10V, f=1MHz	-	-	25	pF
Turn-On Time	$t_{(on)}$	V_{CC}=-15V, I_C=-0.75A, I_{B1}=I_{B2}=-15mA	-	40	-	nS
Turn-Off Time	$t_{(off)}$		-	435	-	nS

Notes:
1. Measured under pulse conditions. Pulse width=300μs, duty cycle ≤2%.

Typical Characteristic Curves

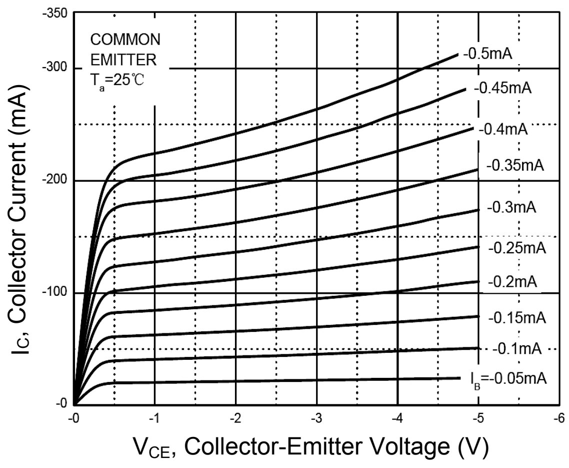


Figure 1. Static Characteristic

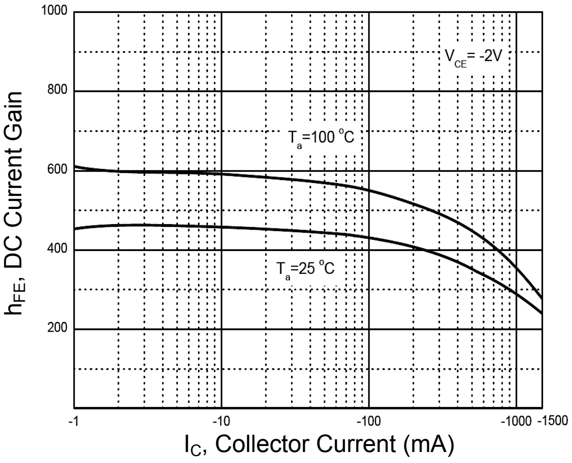


Figure 2. DC Current Gain vs. Collector Current

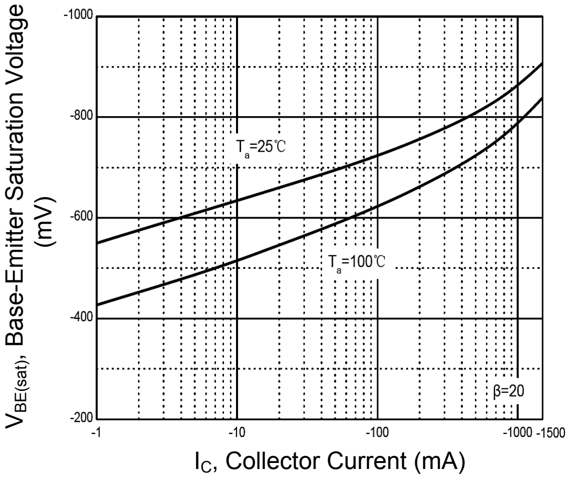


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

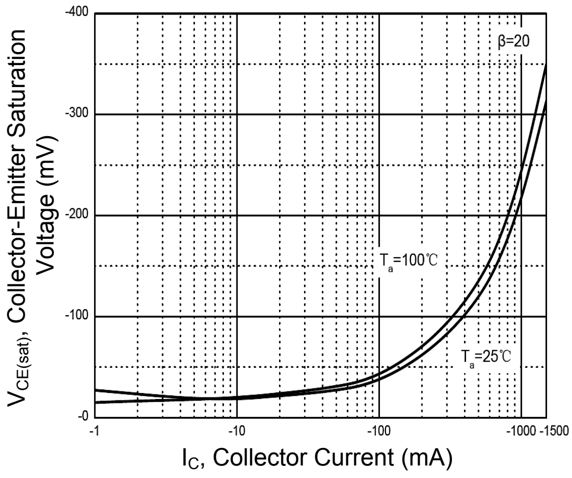


Figure 4. Collector-Emitter Saturation Voltage vs. Collector Current

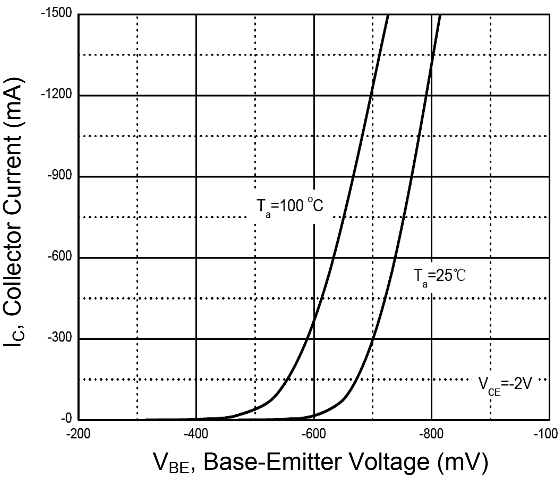


Figure 5. Collector Current vs. Base-Emitter Voltage

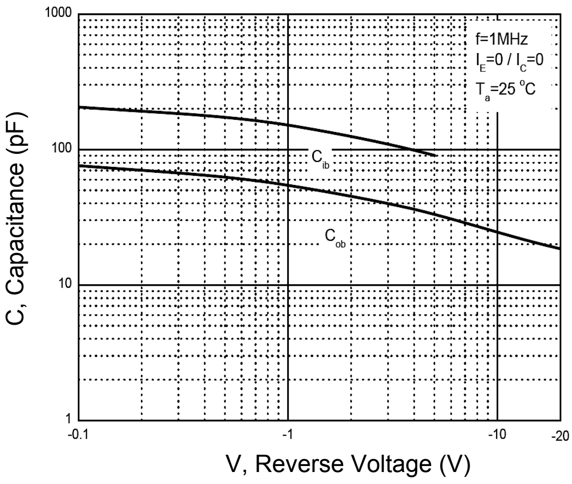


Figure 6. Capacitance Characteristics

Typical Characteristic Curves

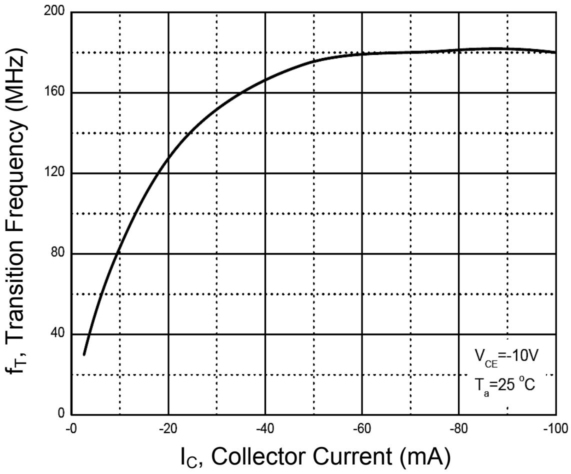


Figure 7. Transition Frequency vs. Collector Current

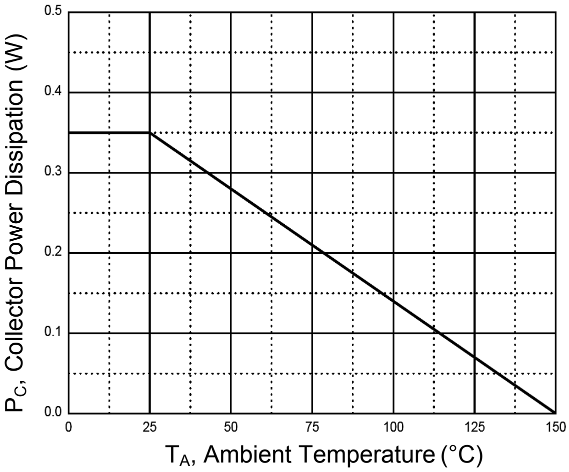
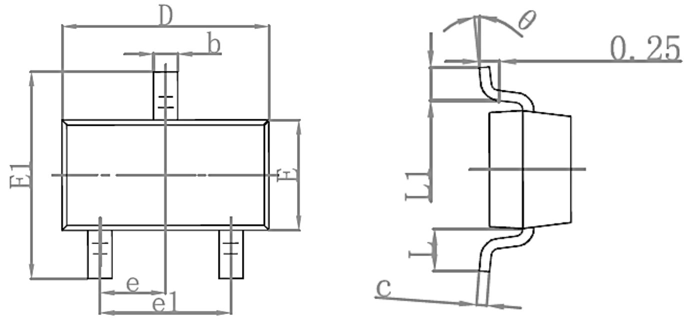


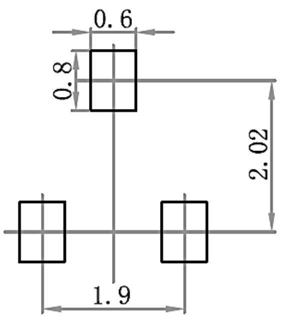
Figure 8. Power Dissipation vs. Ambient Temperature

Package Outline Dimensions (SOT-23)



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°

Recommended Pad Layout



Note:

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

Order Information

Device	Package	Marking	Packaging	SPQ
GSFMMT720	SOT-23	720	Tape & Reel	3,000 Pcs / Reel