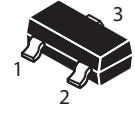
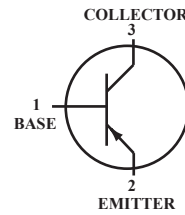


General Purpose Transistor PNP Silicon

(Pb) Lead(Pb)-Free



SOT-23

Maximum Ratings

Rating	Symbol	Value	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CEO}$	-60	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CBO}$	-80	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5.0	V
Collector Current	I_C	-1.0	A
Power Dissipation $T_A=25^\circ\text{C}$	P_D	500	mW
Junction Temperature Range	T_J	+150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$

Device Marking

FMMT591=591

Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless Otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
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Off Characteristics

Collector-Emitter Breakdown Voltage ¹ $I_C = -1.0\text{mA}, I_B = 0$	$V_{(BR)CEO}$	-60	-	-	V
Collector-Base Breakdown Voltage $I_C = -100\mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	-80	-	-	V
Collector Cutoff Current $I_C = 0, I_E = -100\mu\text{A}$	$V_{(BR)EBO}$	-5.0	-	-	V
Collector Cut-off Current $V_{CB} = -60\text{V}, I_E = 0$	I_{CBO}	-	-	-0.1	μA
Emitter Cut-off Current $V_{EB} = -4.0\text{V}, I_C = 0$	I_{EBO}	-	-	-0.1	μA

Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless Otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
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On Characteristics ⁽¹⁾

DC Current Gain $V_{CE} = -5.0\text{V}, I_C = -1.0\text{mA}$	h_{FE1}	100	-	-	
$V_{CE} = -5.0\text{V}, I_C = -500\text{mA}$	h_{FE2}	100	-	300	
$V_{CE} = -5.0\text{V}, I_C = -1.0\text{A}$	h_{FE3}	80	-	-	-
$V_{CE} = -5.0\text{V}, I_C = -2.0\text{A}$	h_{FE4}	15	-	-	
Collector-Emitter Saturation Voltage $I_C = -500\text{mA}, I_B = -50\text{mA}$ $I_C = -1.0\text{A}, I_B = -100\text{mA}$	$V_{CE(sat)}$	-	-	-0.3 -0.6	V
Base-Emitter Saturation Voltage $I_C = -1.0\text{A}, I_B = -100\text{mA}$	$V_{BE(sat)}$	-	-	-1.2	V
Base-Emitter Saturation Voltage $V_{CE} = -5.0\text{V}, I_C = -1.0\text{A}$	V_{BE}	-	-	-1.0	V

Small-signal Characteristics

Transition Frequency $V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$	f_T	150	-	-	MHz
Output Capacitance $V_{CB} = -10\text{V}, f = 1.0\text{MHz}$	C_{ob}	-	-	10	pF

1. Measured under pulsed conditions, Pulse width = 300 μs , Duty cycle \leq 2%.

TYPICAL TRANSIENT CHARACTERISTICS

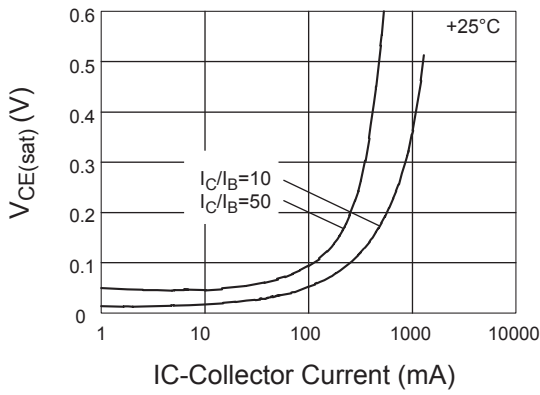


Fig.1 $V_{CE(sat)}$ vs I_C

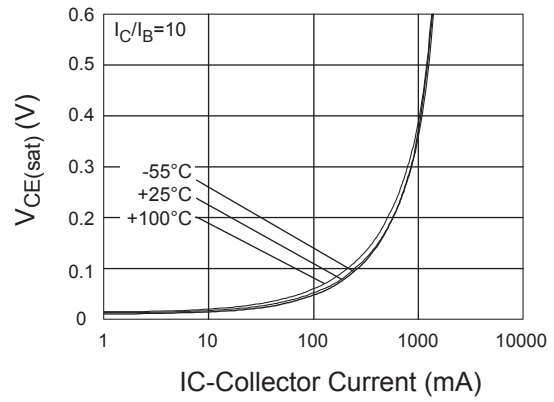


Fig.2 $V_{CE(sat)}$ vs I_C

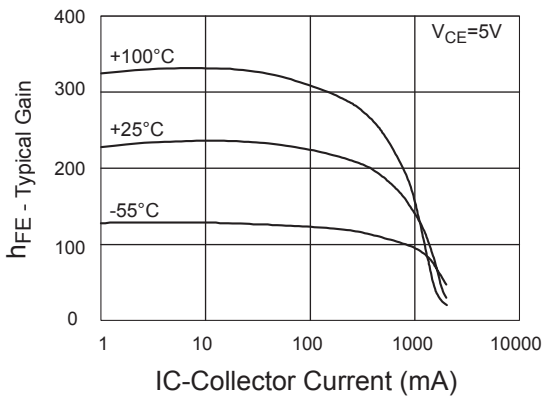


Fig.3 h_{FE} vs I_C

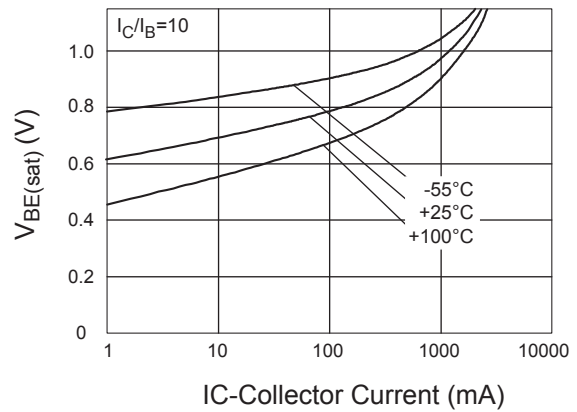


Fig.4 $V_{BE(sat)}$ vs I_C

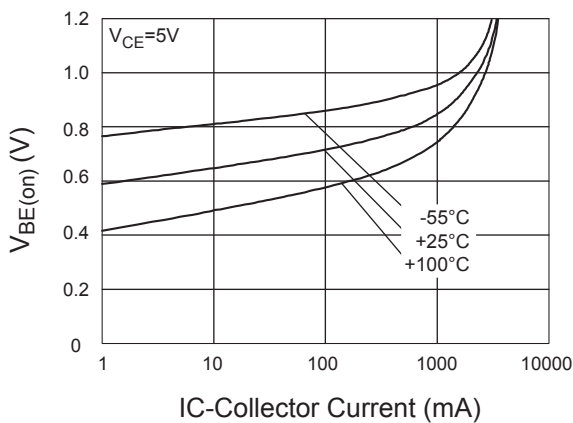


Fig.5 $V_{BE(on)}$ vs I_C

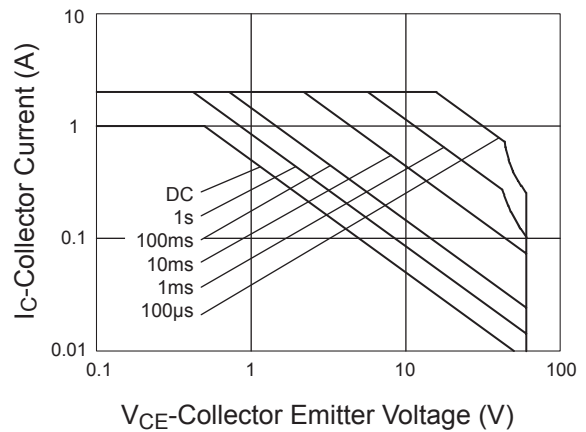
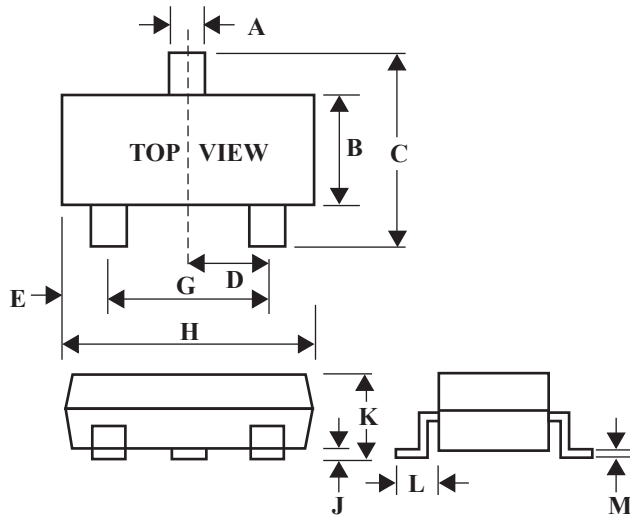


Fig.6 Safe Operating Area

SOT-23 Package Outline Dimensions

Unit:mm



Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25