

SOT-23 Plastic-Encapsulate Transistors

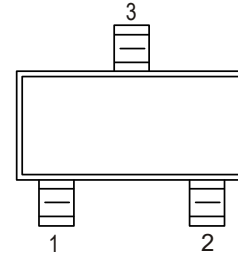
FMMT491 TRANSISTOR (NPN)

SOT-23



FEATURE

- ◆ $V_{CE(sat)}$ maximum specification improvement
- ◆ Reverse blocking specification improvement



1. BASE
2. EMITTER
3. COLLECTOR

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

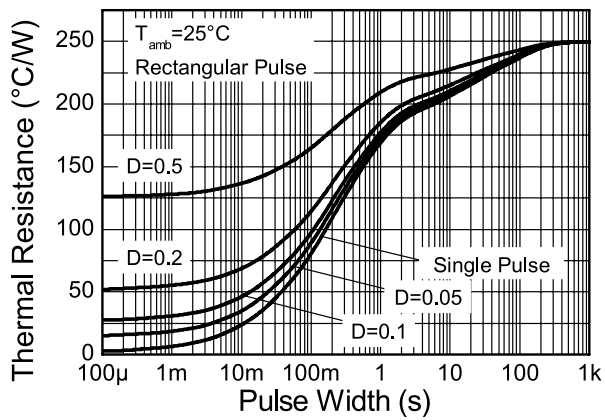
Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	80	V
Collector - Emitter Voltage	V_{CEO}	60	
Emitter - Base Voltage	V_{EBO}	7	
Collector Current - Continuous	I_C	1	A
Collector Current - Pulse	I_{CP}	2	
Power Dissipation	P_D	500	mW
Linear derating factor		4	mW/ $^{\circ}\text{C}$
Junction to ambient	$R_{\theta JA}$	250	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	

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

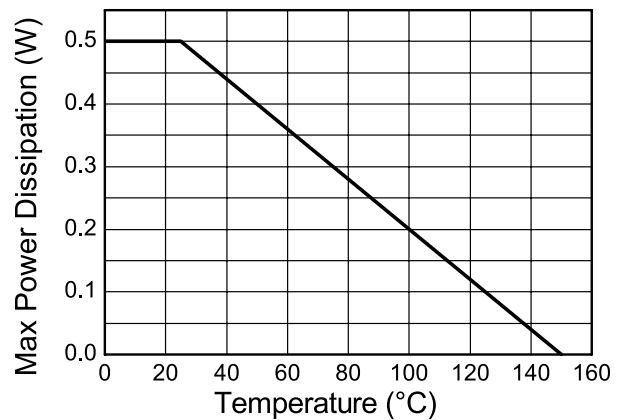
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	$I_C=100\mu\text{A}$, $I_E=0$	80			V
Collector- emitter breakdown voltage	V_{CEO}	$I_C=10\text{mA}$, $I_B=0$	60			
Emitter - base breakdown voltage	V_{EBO}	$I_E=100\mu\text{A}$, $I_C=0$	7			
Collector-base cut-off current	I_{CBO}	$V_{CB}=60\text{V}$, $I_E=0$			100	nA
Collector- emitter cut-off current	I_{CES}	$V_{CE}=60\text{V}$, $I_E=0$			100	
Emitter cut-off current	I_{EBO}	$V_{EB}=5.6\text{V}$, $I_C=0$			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500\text{mA}$, $I_B=50\text{mA}$ (Note.1)			150	mV
		$I_C=1\text{A}$, $I_B=100\text{mA}$ (Note.1)			250	
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C=1\text{A}$, $I_B=100\text{mA}$ (Note.1)			1.1	V
Base-emitter turn-on voltage	$V_{BE(on)}$	$V_{CE}=5\text{V}$, $I_C=1\text{A}$ (Note.1)			1	
DC current gain	$h_{FE(1)}$	$V_{CE}=5\text{V}$, $I_C=1\text{mA}$	100			
	$h_{FE(2)}$	$V_{CE}=5\text{V}$, $I_C=500\text{mA}$	100		300	
	$h_{FE(3)}$	$V_{CE}=5\text{V}$, $I_C=1\text{A}$	80			
	$h_{FE(4)}$	$V_{CE}=5\text{V}$, $I_C=2\text{A}$	30			
Collector output capacitance	C_{ob}	$V_{CB}=10\text{V}$, $f=1\text{MHz}$			10	pF
Transition frequency	f_T	$V_{CE}=10\text{V}$, $I_C=50\text{mA}$, $f=100\text{MHz}$	150			MHz

Note.1: Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

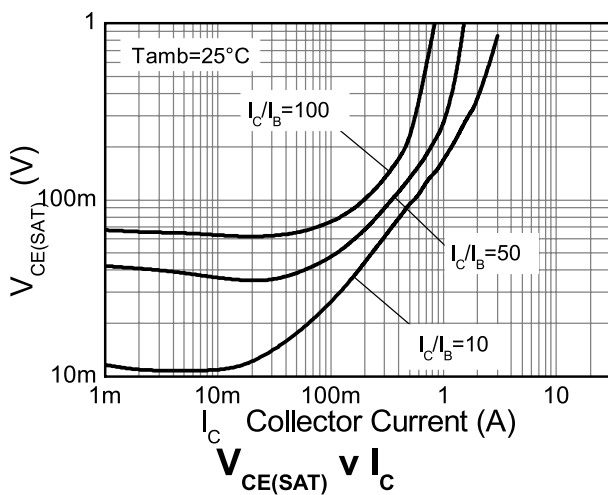
TYPICAL CHARACTERISTICS



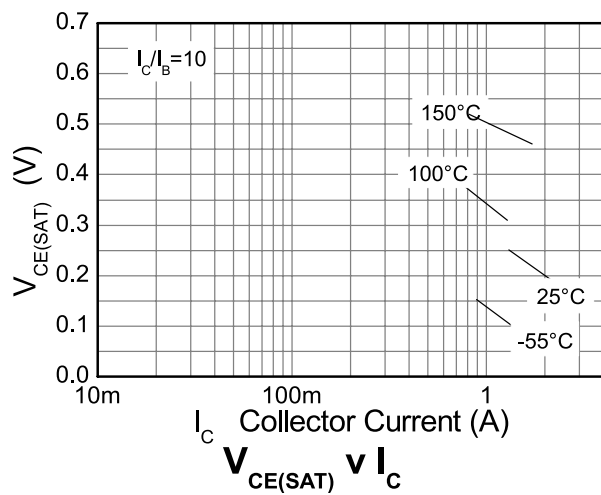
Transient Thermal Impedance



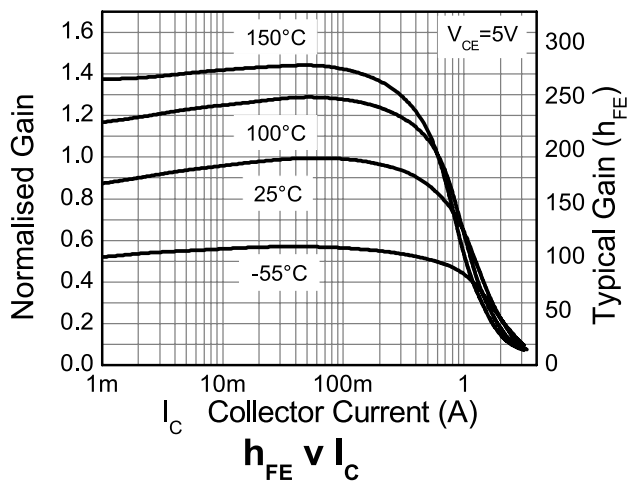
Derating Curve



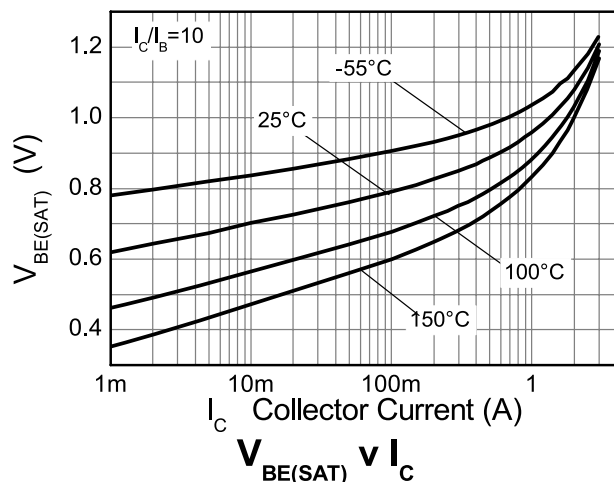
$V_{\text{CE(SAT)}} \propto I_{\text{C}}$



$V_{\text{CE(SAT)}} \propto I_{\text{C}}$



$h_{\text{FE}} \propto I_{\text{C}}$

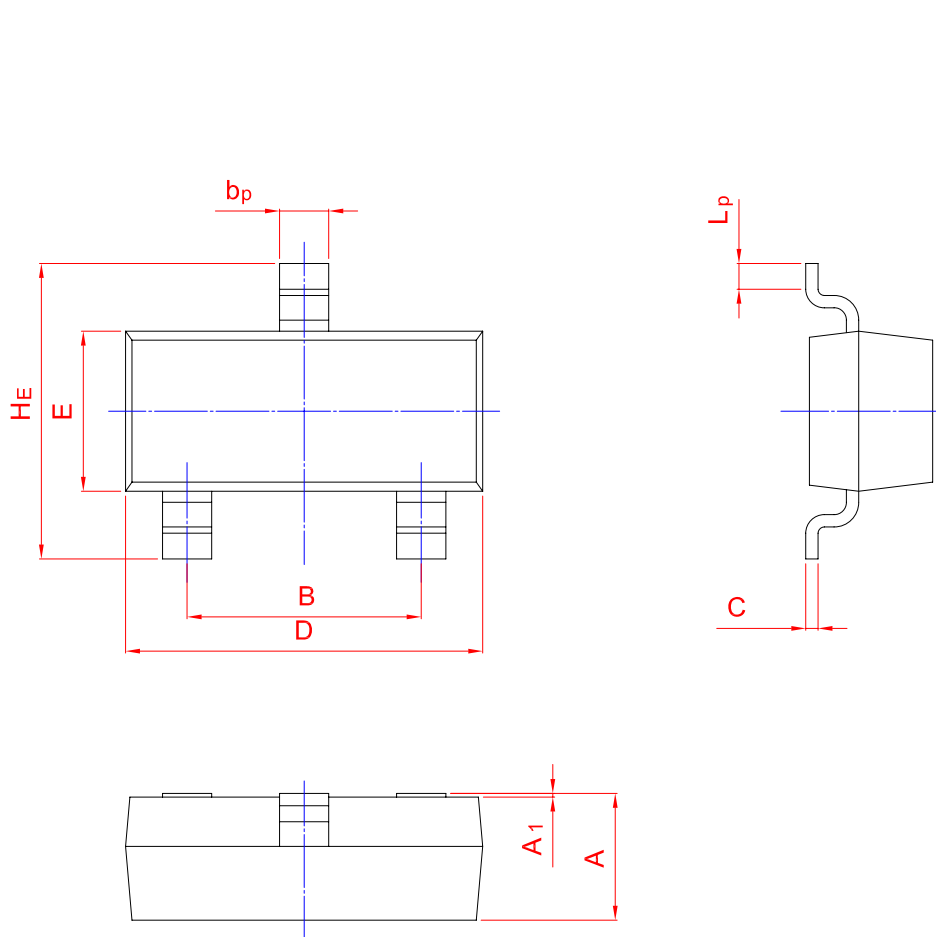


$V_{\text{BE(SAT)}} \propto I_{\text{C}}$

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20