

RoHS Compliant Product
A suffix of "-C" specifies halogen and lead free

FEATURES

- Low $V_{CE(sat)}$ and $R_{CE(sat)}$
- High Collector Current
- High DC Current Gain
- Fast Switching Time
- Complement of the MMBT357-C

APPLICATION

- Various Drivers
- LF Amplifiers
- Muting Circuit
- DC/DC Convertors
- Battery Chargers
- Supply Line Switching

MARKING

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PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

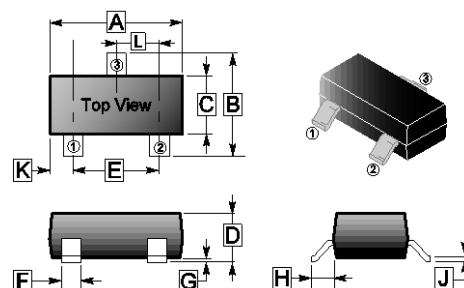
ORDER INFORMATION

Part Number	Type
MMBT356-C	Lead (Pb)-free and Halogen-free

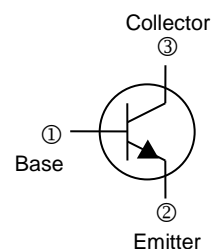
ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Collector-Base Voltage	V_{CB0}	50	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EB0}	5	V
Collector Current	I_C	DC	3
		Pulse ¹	5
Collector Power Dissipation	P_C ²	0.4	W
	P_C ³	1	
Junction, Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Data			
Thermal Resistance from Junction-Ambient ³	$R_{\theta JA}$	Steady State, 125	$^\circ\text{C/W}$
Thermal Resistance from Junction-Ambient ²		313	

SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10	REF.
B	2.10	3.00	H	0.40	REF.
C	1.20	1.70	J	0.047	0.207
D	0.89	1.40	K	0.50	REF.
E	2.00 TYP.		L	0.95	REF.
F	0.30	0.50			



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	50	-	-	V	$I_C=100\mu\text{A}, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	50	-	-		$I_C=10\text{mA}, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	-	-		$I_E=100\mu\text{A}, I_C=0$
Collector Cut-off Current	I_{CBO}	-	-	100	nA	$V_{CB}=50\text{V}, I_E=0$
Collector Cut-off Current	I_{CES}	-	-	100		$V_{CES}=50\text{V}$
Emitter Cut-off Current	I_{EBO}	-	-	100		$V_{EB}=5\text{V}, I_C=0$
DC Current Gain	h_{FE}	300	-	-		$V_{CE}=2\text{V}, I_C=100\text{mA}$
		300	-	700		$V_{CE}=2\text{V}, I_C=1\text{A}$
		200	-	-		$V_{CE}=2\text{V}, I_C=2\text{A}$
		100	-	-		$V_{CE}=2\text{V}, I_C=3\text{A}$
Collector-Emitter Saturation Voltage ¹	$V_{CE(sat)}$	-	-	80	mV	$I_C=0.5\text{A}, I_B=50\text{mA}$
		-	-	280		$I_C=2\text{A}, I_B=100\text{mA}$
		-	-	370		$I_C=3\text{A}, I_B=300\text{mA}$
Equivalent On-Resistance ¹	$R_{CE(sat)}$	-	75	125	m Ω	$I_C=3\text{A}, I_B=300\text{mA}$
Base-Emitter Saturation Voltage ¹	$V_{BE(sat)}$	-	-	1.1	V	$I_C=2\text{A}, I_B=100\text{mA}$
		-	-	1.2		$I_C=3\text{A}, I_B=300\text{mA}$
Base-Emitter Voltage ¹	$V_{BE(on)}$	-	-	1.1	V	$I_C=1\text{A}, V_{CE}=2\text{V}$
Collector Output Capacitance	C_{ob}	-	25	-	pF	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$
Transition Frequency	f_T	-	100	-	MHz	$V_{CE}=5\text{V}, I_C=100\text{mA}$

Notes:

1. Pulse test: pulse width $\leq 100\mu\text{s}$, duty cycle $\leq 2\%$.
2. When mounted on Min. copper pad.
3. Surface Mounted on 1" x 1" FR-4 Board with 2oz copper.

TYPICAL CHARACTERISTICS

Fig.1 IC - VBE(on)

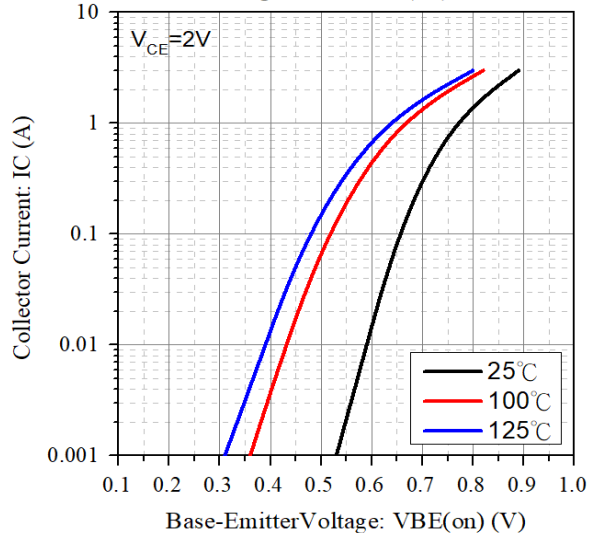


Fig.2 hFE - IC

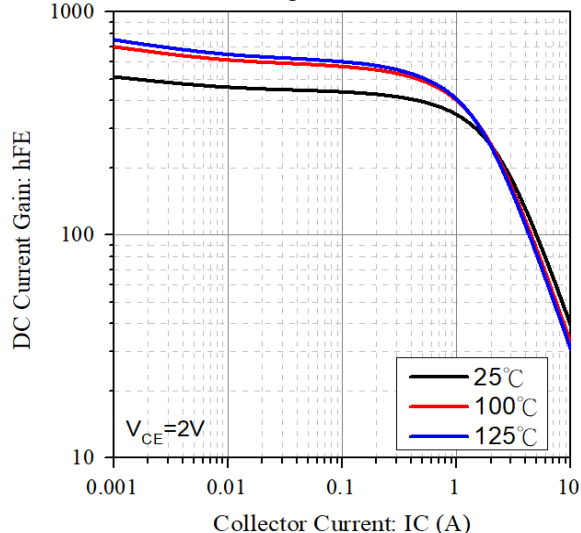


Fig.3 VCE(sat) - IC

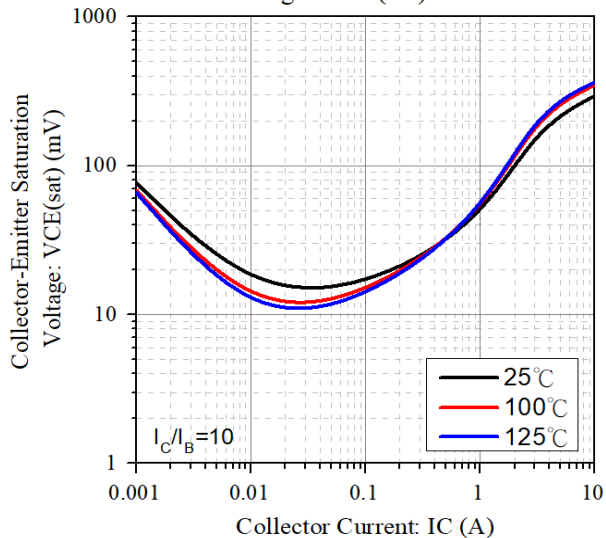


Fig.4 VCE(sat) - IC

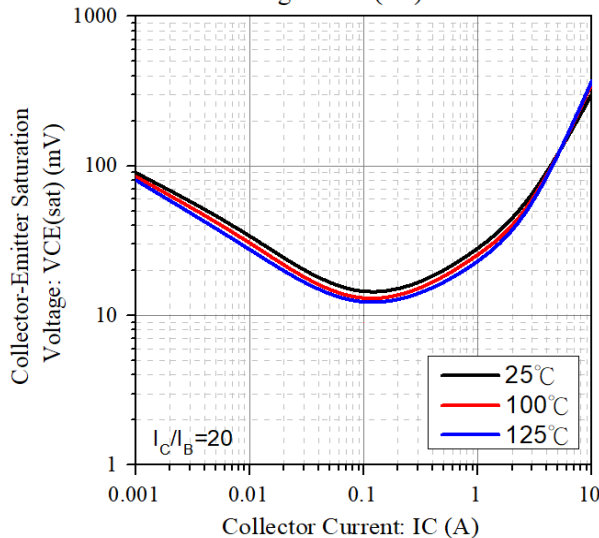


Fig.5 VBE(sat) - IC

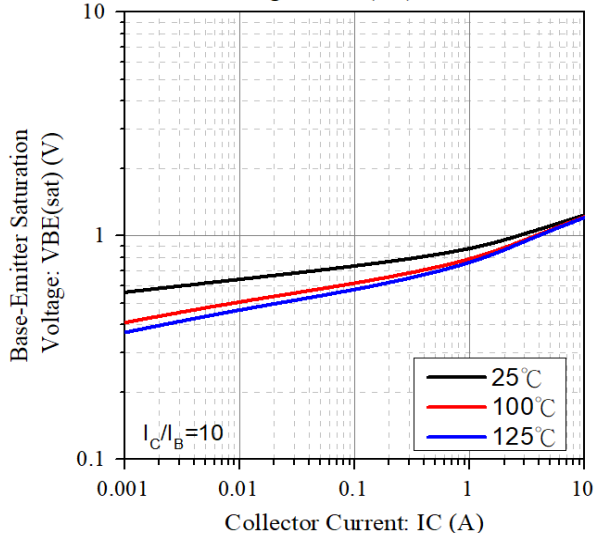
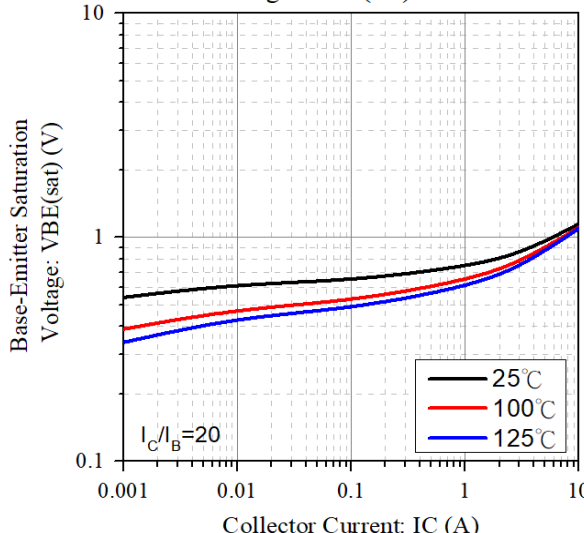


Fig.6 VBE(sat) - IC



TYPICAL CHARACTERISTICS

Fig.7 f_T - I_E

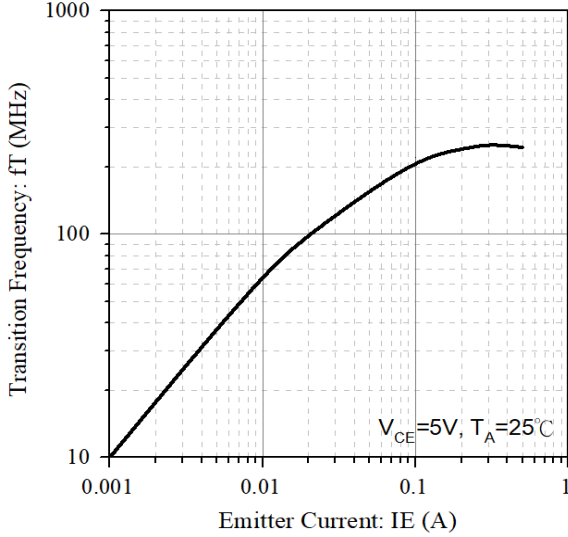


Fig.8 C_{ob} - V_{CB}

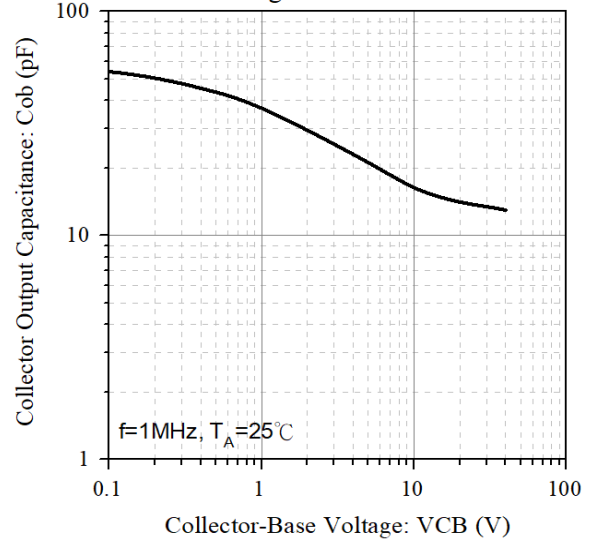


Fig.9 C_{ib} - V_{EB}

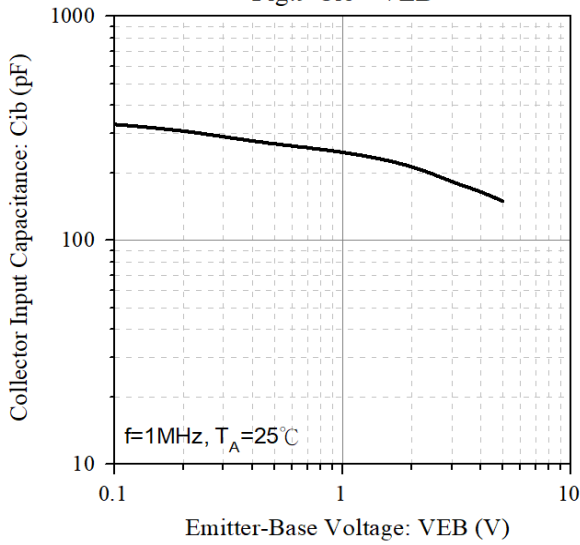


Fig.10 Mounting Pad Layout

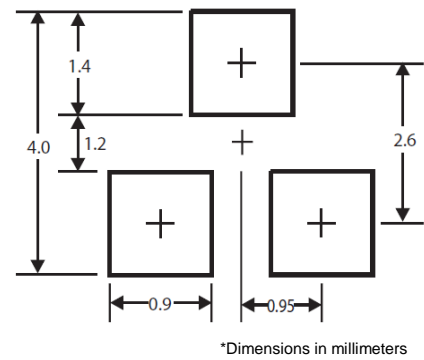


Fig.11 $R_{CE(sat)}$ - I_C

