



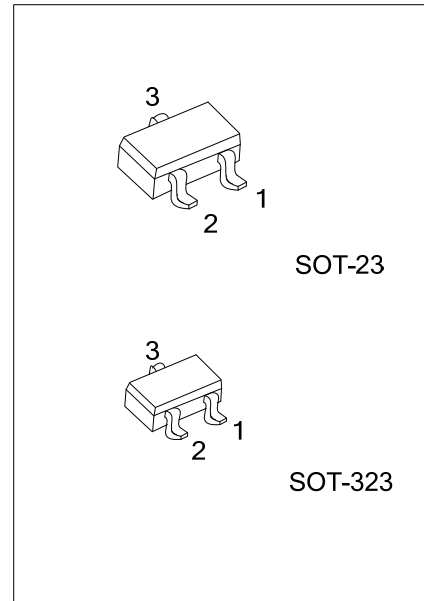
MMBT2907A

PNP SILICON TRANSISTOR

PNP GENERAL PURPOSE AMPLIFIER

DESCRIPTION

This UTC **MMBT2907A** is designed for use as a general purpose amplifier and switch requiring collector currents to 500 mA.



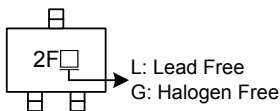
Lead-free: MMBT2907AL
Halogen-free: MMBT2907AG

ORDERING INFORMATION

Ordering Number			Package	Pin Assignment			Packing
Normal	Lead Free	Halogen Free		1	2	3	
MMBT2907A-AE3-R	MMBT2907AL-AE3-R	MMBT2907AG-AE3-R	SOT-23	E	B	C	Tape Reel
MMBT2907A-AL3-R	MMBT2907AL-AL3-R	MMBT2907AG-AL3-R	SOT-323	E	B	C	Tape Reel

<p>MMBT2907AL-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323 (3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p>
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MARKING



MMBT2907A

PNP SILICON TRANSISTOR

■ ABSOLUTE MAXIMUM RATING (Ta=25°C unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage	V_{CEO}	-60	V
Collector-Base Voltage	V_{CBO}	-60	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current Continuous	I_C	-800	mA
Power Dissipation	SOT-23	350	mW
	SOT-323	275	mW
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	SOT-23	357	°C/W
	SOT-323	455	°C/W

■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage (Note)	BV_{CEO}	$I_C = -10\text{mA}, I_B = 0$	-60			V
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = -10\mu\text{A}, I_E = 0$	-60			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = -10\mu\text{A}, I_C = 0$	-5			V
Base Cutoff Current	I_B	$V_{CB} = -30\text{V}, V_{EB} = -0.5\text{V}$			-50	nA
Collector Cutoff Current	I_{CEX}	$V_{CE} = -30\text{V}, V_{BE} = -0.5\text{V}$			-50	nA
Collector Cutoff Current	I_{CBO}	$V_{CB} = -50\text{V}, I_E = 0$			-0.02	μA
		$V_{CB} = -50\text{V}, I_E = 0, T_A = 150^\circ\text{C}$			-20	μA
ON CHARACTERISTICS						
DC Current Gain	h_{FE}	$I_C = -0.1\text{mA}, V_{CE} = -10\text{V}$	75			
		$I_C = -1.0\text{mA}, V_{CE} = -10\text{V}$	100			
		$I_C = -10\text{mA}, V_{CE} = -10\text{V}$	100			
		$I_C = -150\text{mA}, V_{CE} = -10\text{V}$ (Note)	100		300	
		$I_C = -500\text{mA}, V_{CE} = -10\text{V}$ (Note)	50			
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C = -150\text{mA}, I_B = -15\text{mA}$			-0.4	V
		$I_C = -500\text{mA}, I_B = -50\text{mA}$			-1.6	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = -150\text{mA}, I_B = -15\text{mA}$ (Note)			-1.3	V
		$I_C = -500\text{mA}, I_B = -50\text{mA}$			-2.6	V
SMALL SIGNAL CHARACTERISTICS						
Current Gain – Bandwidth Product	f_T	$I_C = -50\text{mA}, V_{CE} = -20\text{V}, f = 100\text{MHz}$	200			MHz
Output Capacitance	C_{ob}	$V_{CB} = -10\text{V}, I_E = 0, f = 100\text{kHz}$			8	pF
Input Capacitance	C_{ib}	$V_{EB} = -2\text{V}, I_C = 0, f = 100\text{kHz}$			30	pF
SWITCHING CHARACTERISTICS						
Turn-on Time	t_{ON}	$V_{CC} = 30\text{V}, I_C = -150\text{mA}, I_{B1} = -15\text{mA}$			45	ns
Delay Time	t_{DLY}				10	ns
Rise Time	t_R				40	ns
Turn-off Time	t_{OFF}	$V_{CC} = 6\text{V}, I_C = -150\text{mA}, I_{B1} = I_{B2} = -15\text{mA}$			100	ns
Storage Time	t_S				80	ns
Fall Time	t_F				30	ns

Note: Pulse Test: Pulse Width $\leq 300\text{ms}$, Duty Cycle $\leq 2.0\%$

■ TEST CIRCUITS

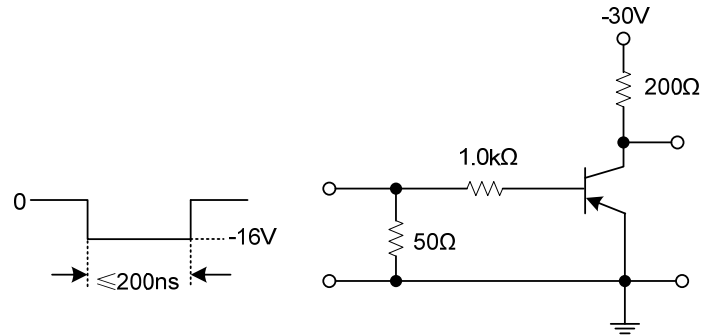


Fig 1. Saturated Turn-On Switching Time Test Circuit

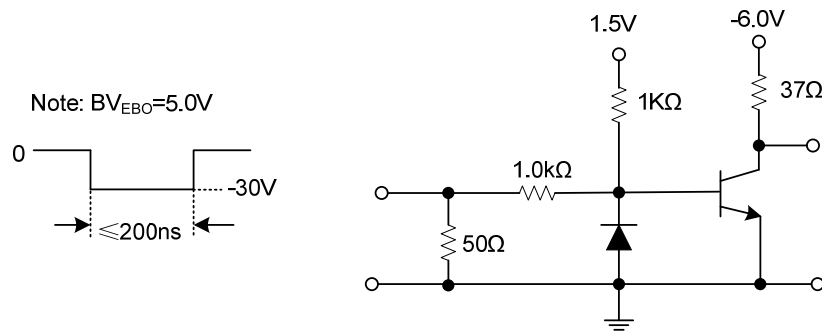
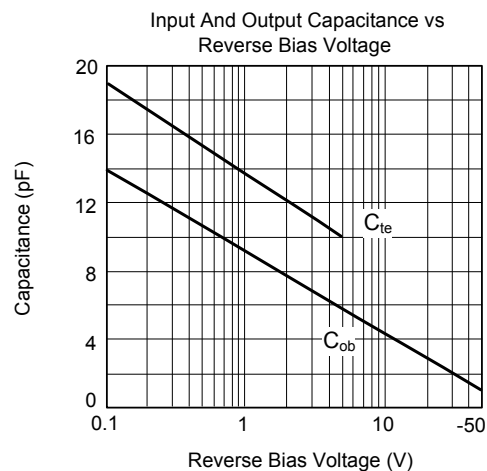
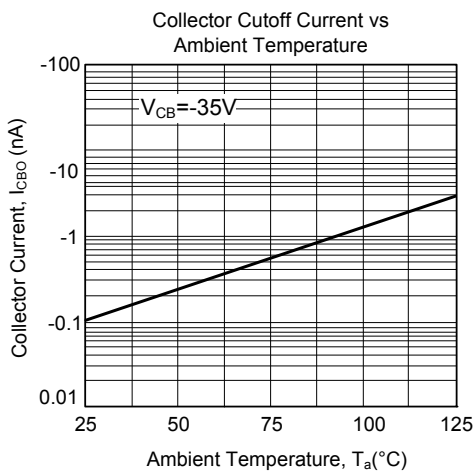
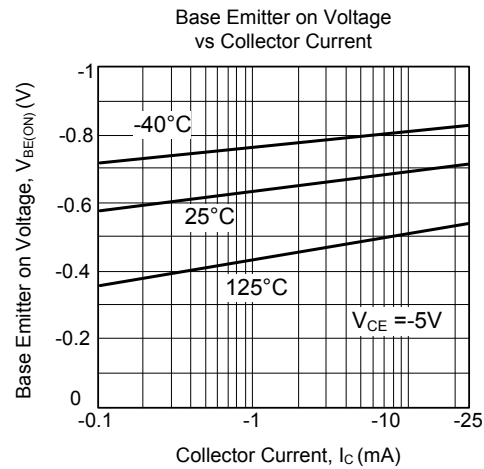
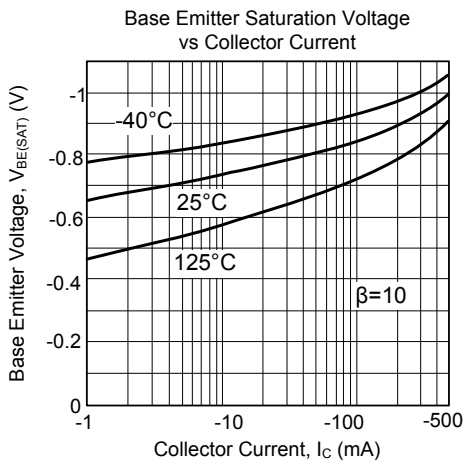
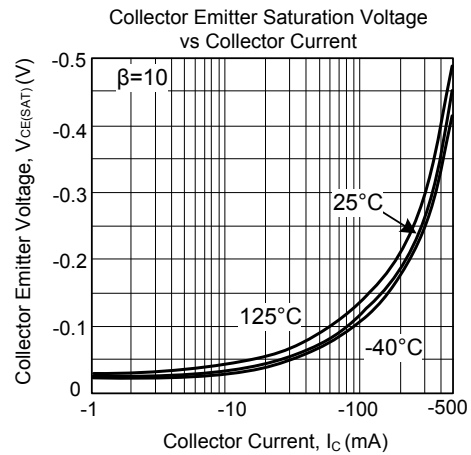
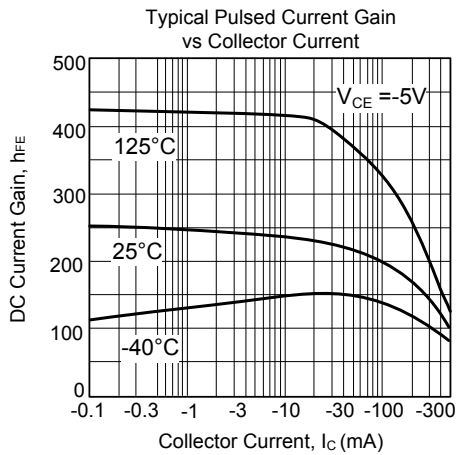
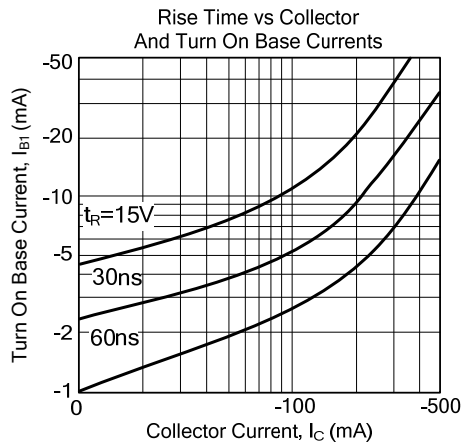
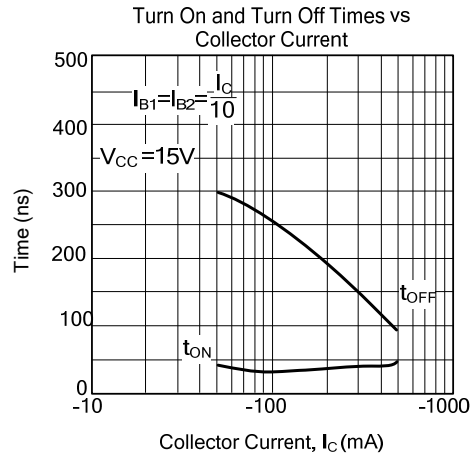
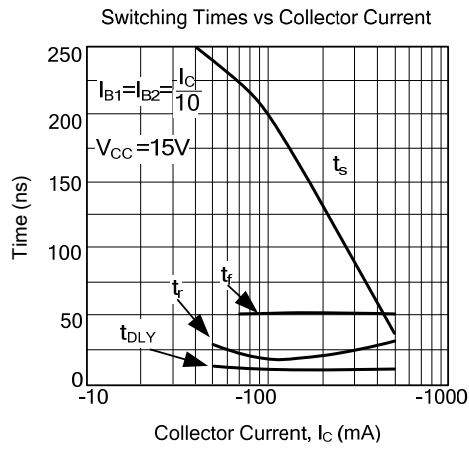


Fig 2. Saturated Turn-Off Switching Time Test Circuit

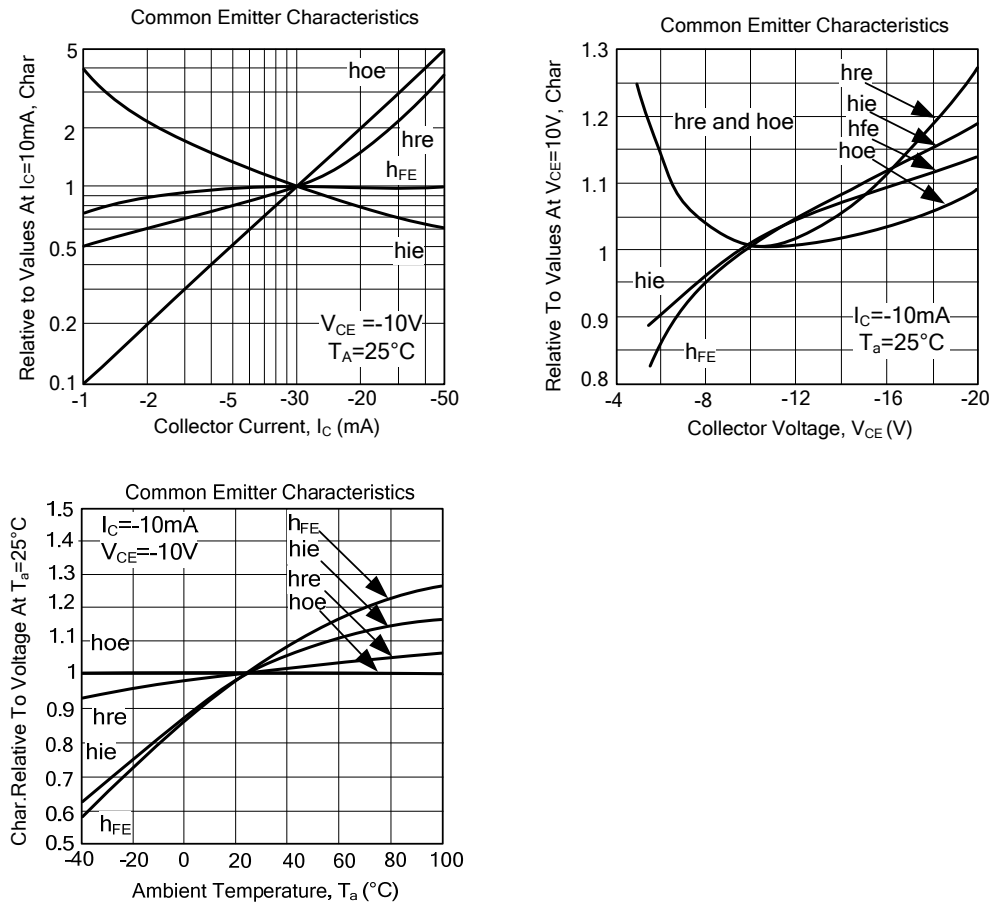
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL COMMON EMITTER CHARACTERISTICS (f=1kHz)



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