



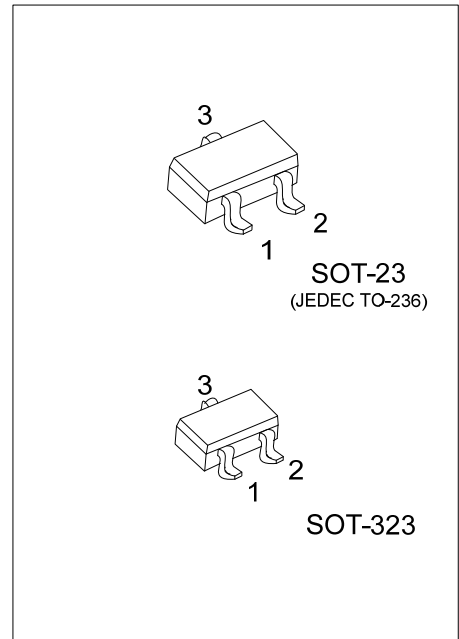
MMBT2907A

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 600 mA.



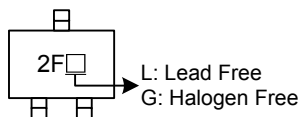
ORDERING INFORMATION

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

Note: Pin assignment: B: Base E: Emitter C: Collector

<p>MMBT2907AG-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



MMBT2907A

PNP SILICON TRANSISTOR

■ ABSOLUTE MAXIMUM RATING (T_A=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	-600	mA
Power Dissipation	SOT-23	P _D	350	mW
	SOT-323		275	mW
Junction Temperature		T _J	+150	°C
Operating Temperature		T _{OPR}	-40 ~ +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 CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Case	SOT-23	θ _{JA}	357	°C/W
	SOT-323		455	°C/W

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage (Note)	BV _{CEO}	I _C =-10mA, I _B =0	-60			V
Collector-Base Breakdown Voltage	BV _{CBO}	I _C =-10μA, I _E =0	-60			V
Emitter-Base Breakdown Voltage	BV _{EBO}	I _E =-10μA, I _C =0	-5			V
Base Cutoff Current	I _B	V _{CB} =-30V, V _{BE} =-0.5V			-50	nA
Collector Cutoff Current	I _{CEX}	V _{CE} =-30V, V _{BE} =-0.5V			-50	nA
Collector Cutoff Current	I _{CBO}	V _{CB} =-50V, I _E =0			-0.02	μA
		V _{CB} =-50V, I _E =0, T _A =150°C			-20	μA
ON CHARACTERISTICS						
DC Current Gain	h _{FE}	I _C =-0.1mA, V _{CE} =-10V	75			
		I _C =-1.0 mA, V _{CE} =-10V	100			
		I _C =-10 mA, V _{CE} =-10V	100			
		I _C =-150 mA, V _{CE} =-10V (Note)	100		300	
		I _C =-500 mA, V _{CE} =-10V (Note)	50			
Collector-Emitter Saturation Voltage (Note)	V _{CE(SAT)}	I _C =-150 mA, I _B =-15mA			-0.4	V
		I _C =-500 mA, I _B =-50mA			-1.6	V
Base-Emitter Saturation Voltage	V _{BE(SAT)}	I _C =-150 mA, I _B =-15mA (Note)			-1.3	V
		I _C =-500 mA, I _B =-50mA			-2.6	V
SMALL SIGNAL CHARACTERISTICS						
Current Gain – Bandwidth Product	f _T	I _C =-50mA, V _{CE} =-20V, f=100MHz	200			MHz
Output Capacitance	C _{ob}	V _{CB} =-10V, I _E =0, f=100kHz			8	pF
Input Capacitance	C _{ib}	V _{EB} =-2V, I _C =0, f=100kHz			30	pF
SWITCHING CHARACTERISTICS						
Turn-on Time	t _{ON}	V _{CC} =30V, I _C =-150mA, I _{B1} =-15mA			45	ns
Delay Time	t _{DLY}				10	ns
Rise Time	t _R				40	ns
Turn-off Time	t _{OFF}	V _{CC} =6V, I _C =-150mA, I _{B1} = I _{B2} =-15mA			100	ns
Storage Time	t _S				80	ns
Fall Time	t _F				30	ns

Note: Pulse Test: Pulse Width ≤ 300ms, Duty Cycle ≤ 2.0%

■ TEST CIRCUITS

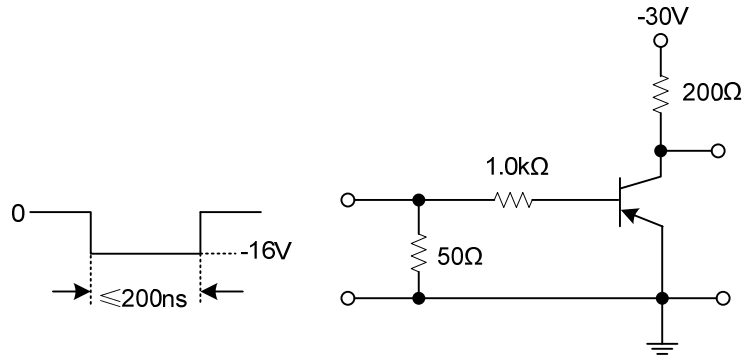


Fig 1. Saturated Turn-On Switching Time Test Circuit

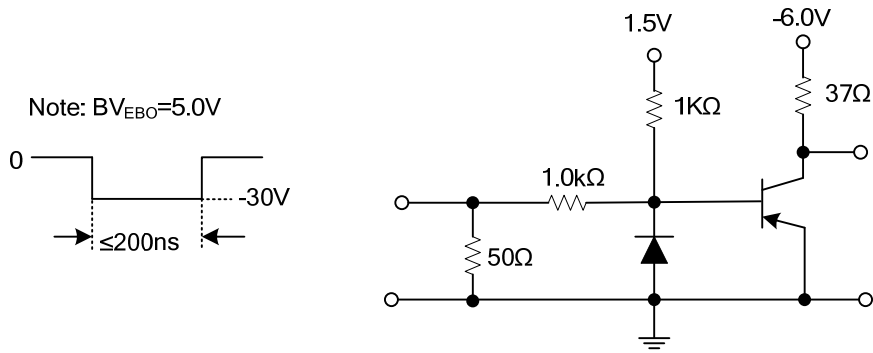
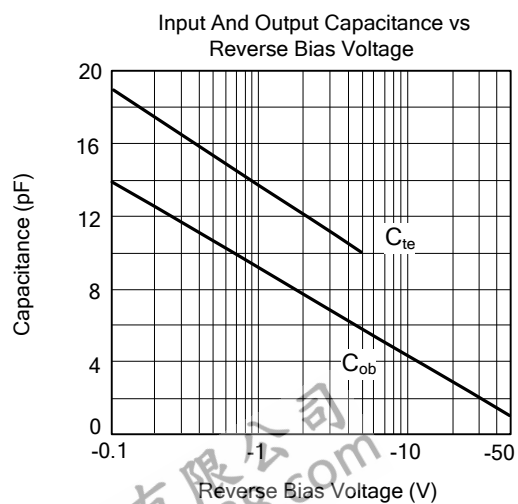
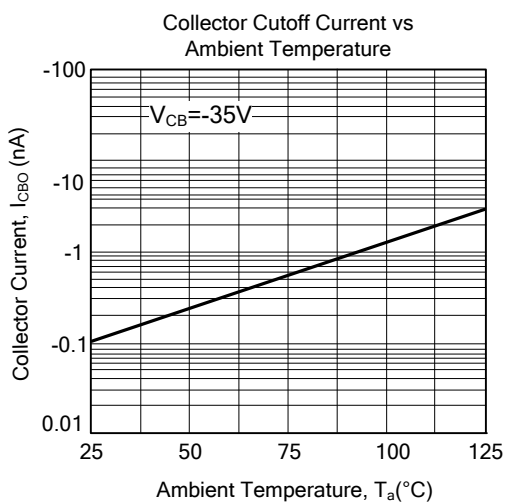
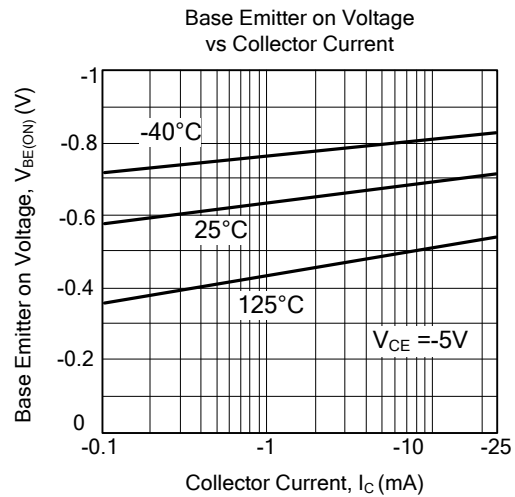
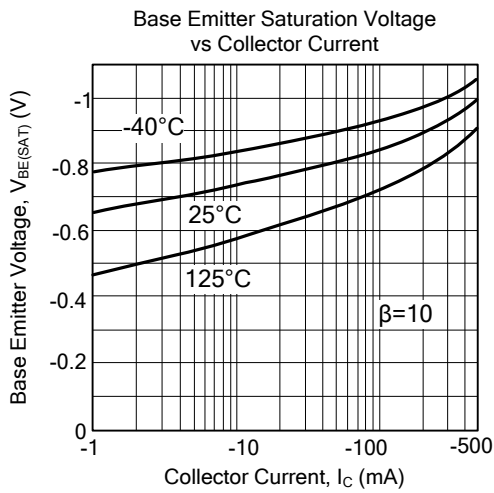
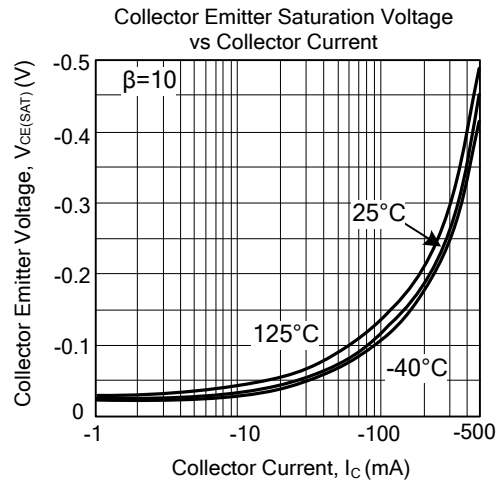
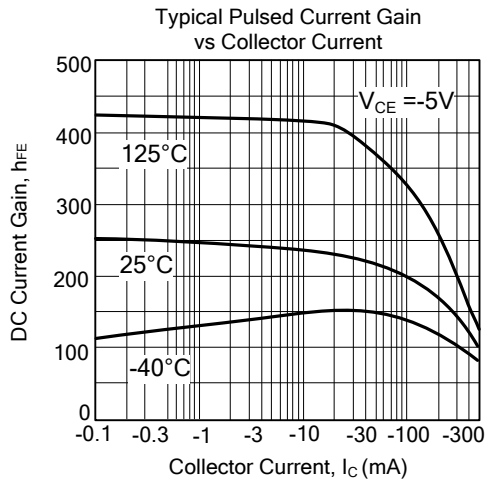
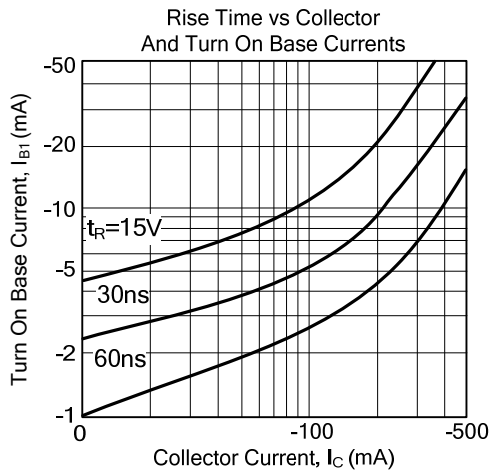
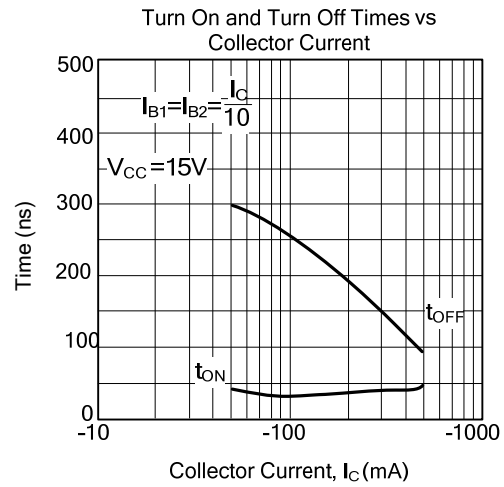
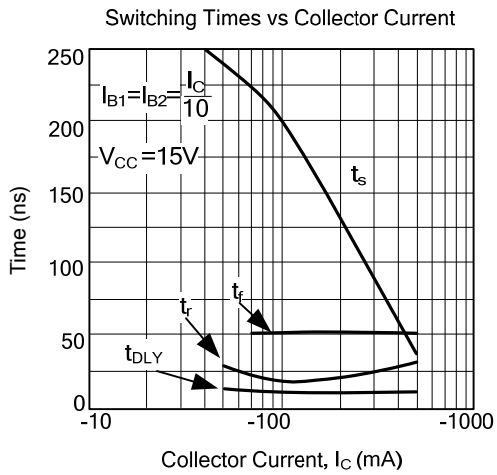


Fig 2. Saturated Turn-Off Switching Time Test Circuit

TYPICAL CHARACTERISTICS

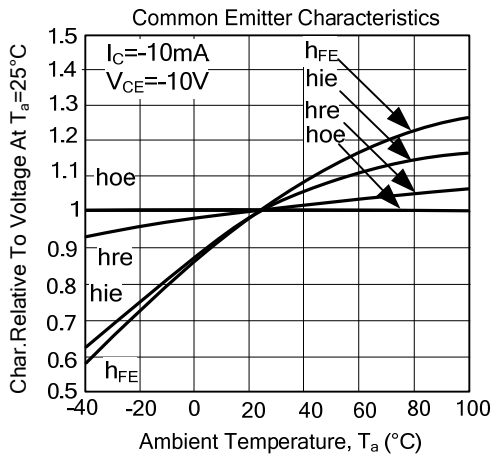
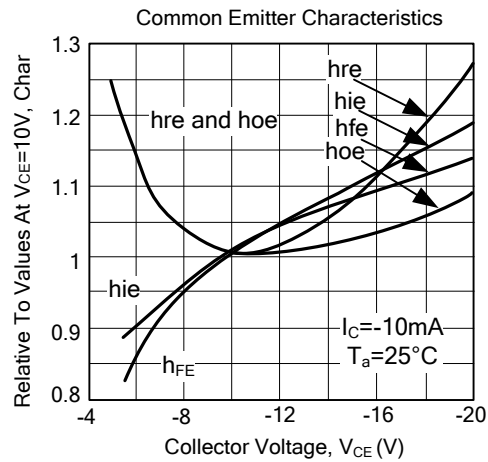
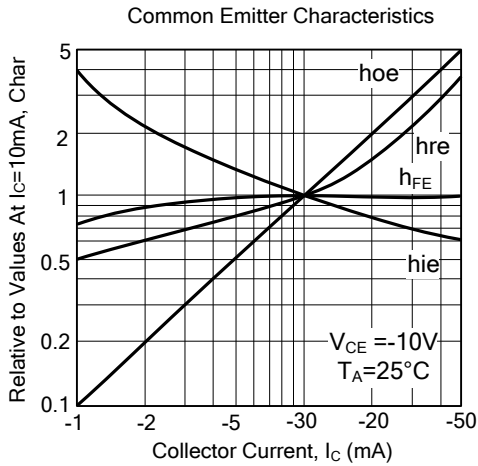


■ TYPICAL CHARACTERISTICS (Cont.)



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■ TYPICAL COMMON EMITTER CHARACTERISTICS (f=1kHz)



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