



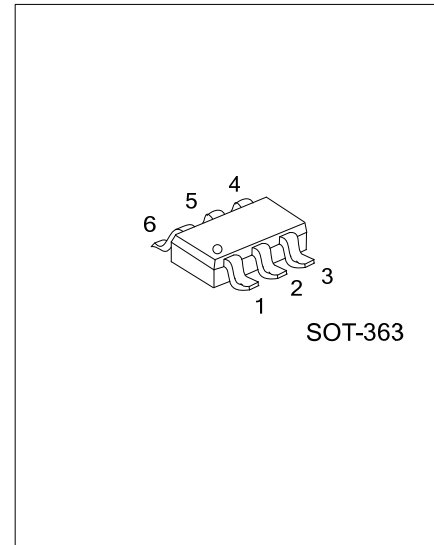
# MMDT2907A

**DUAL TRANSISTOR**

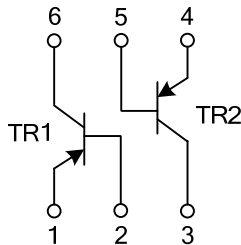
## DUAL PNP GENERAL PURPOSE AMPLIFIER

■ DESCRIPTION

The UTC **MMDT2907A** is an Dual PNP general purpose amplifier. it's suitable for a medium power amplifier and switch requiring collector currents up to 500mA.



■ EQUIVALENT CIRCUIT



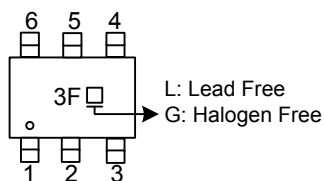
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
MMDT2907AL-AL6-R	MMDT2907AG-AL6-R	SOT-363	E1	B1	C2	E2	B2	C1	Tape Reel

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

<p>MMDT2907AG-AL6-R</p>	<p>(1) R: Tape Reel                  (2) AL6: SOT-363                  (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATING ( $T_A=25^{\circ}\text{C}$  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	$P_D$	300	mW
Junction Temperature	$T_J$	+150	$^{\circ}\text{C}$
Operating Temperature	$T_{OPR}$	-40 ~ +150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$

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	$\theta_{JA}$	415	$^{\circ}\text{C}/\text{W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
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	$\mu\text{A}$
		$V_{CB}=-50\text{V}, I_E=0, T_A=150^{\circ}\text{C}$			-20	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
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
<b>SMALL SIGNAL CHARACTERISTICS</b>						
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
<b>SWITCHING CHARACTERISTICS</b>						
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

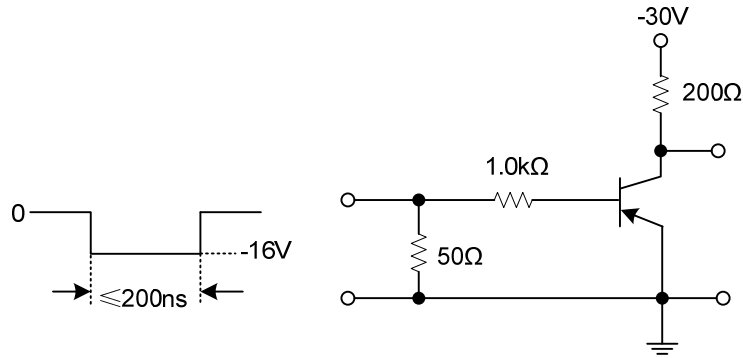


Fig 1. Saturated Turn-On Switching Time Test Circuit

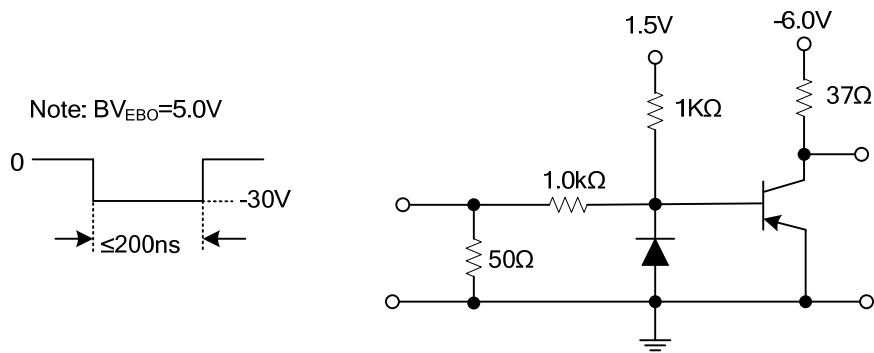
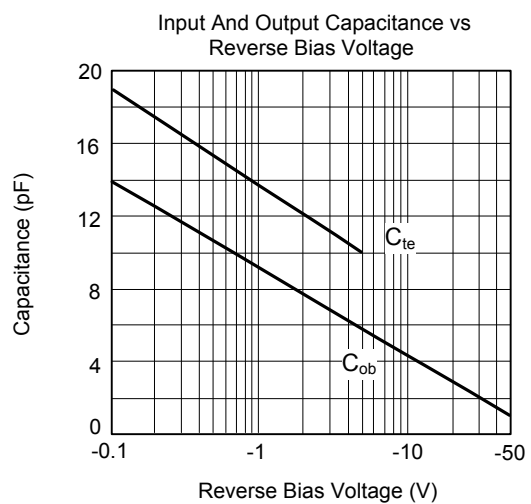
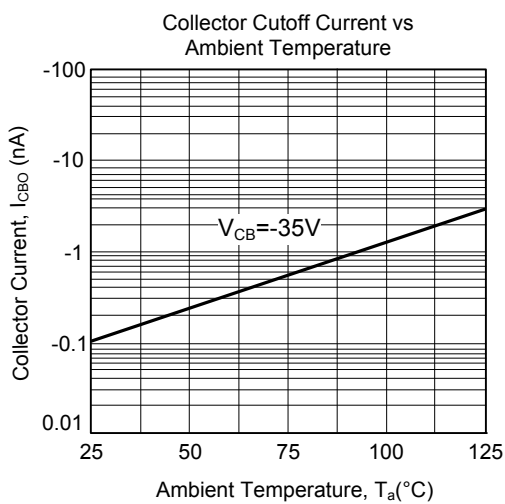
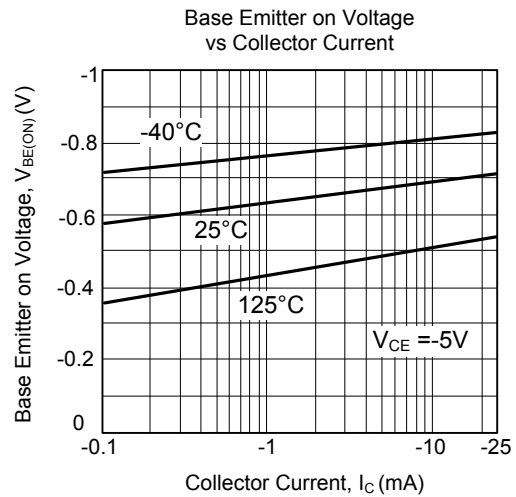
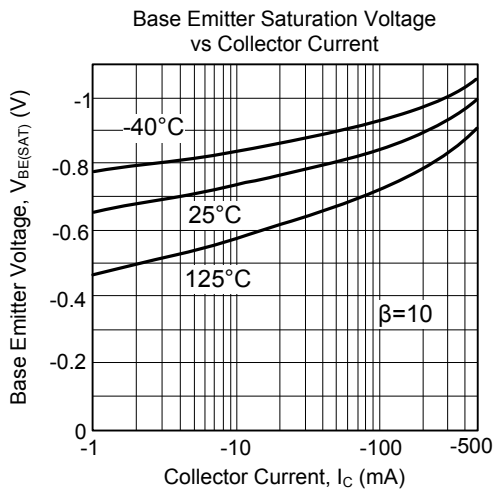
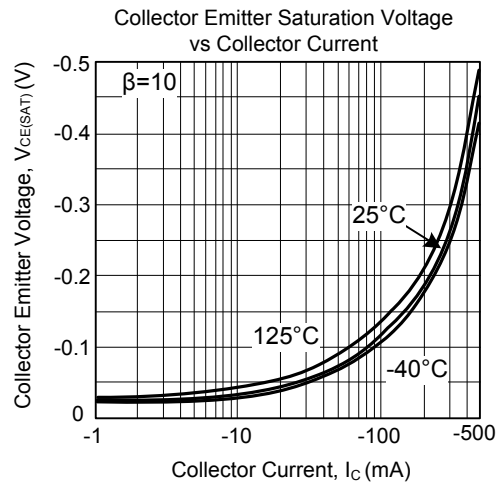
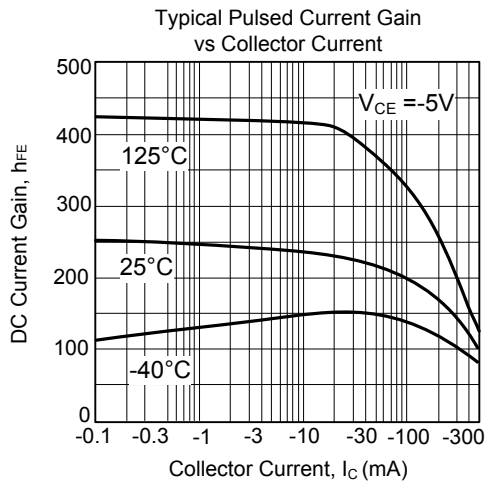
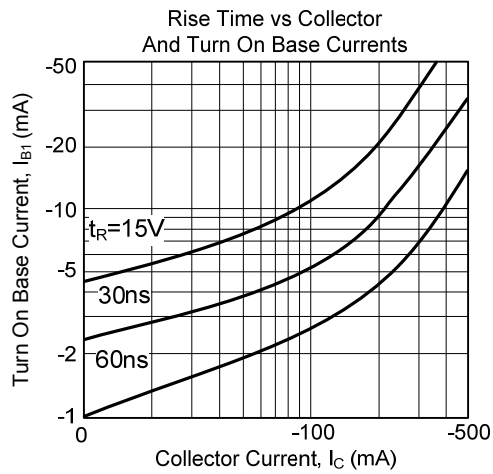
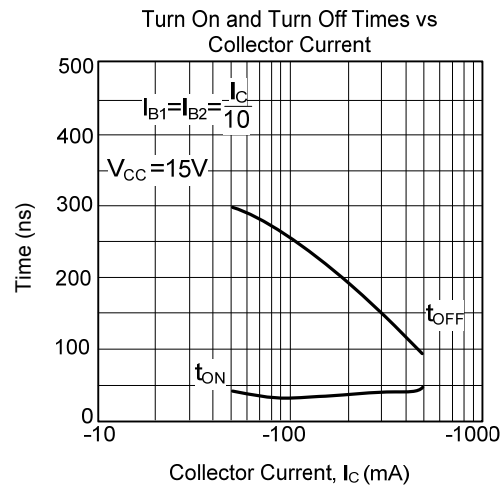
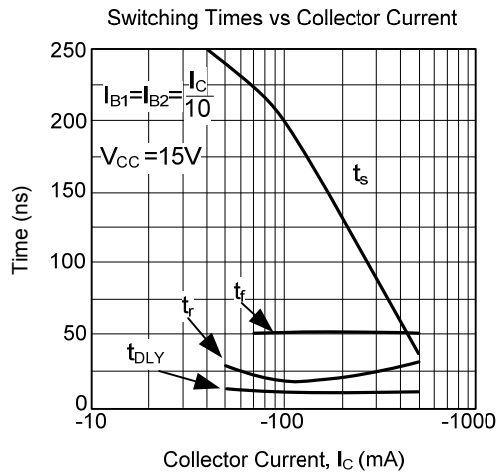


Fig 2. Saturated Turn-Off Switching Time Test Circuit

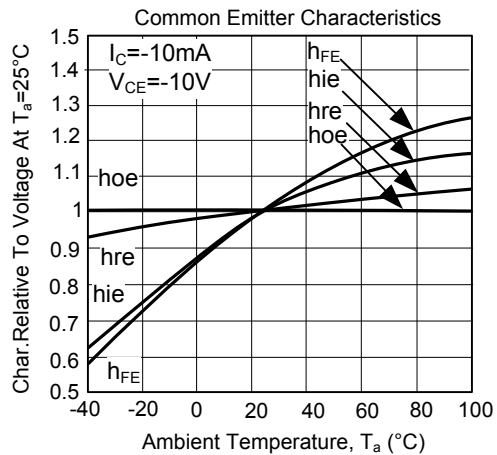
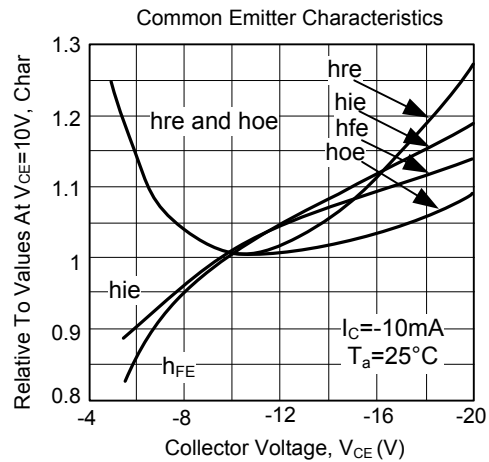
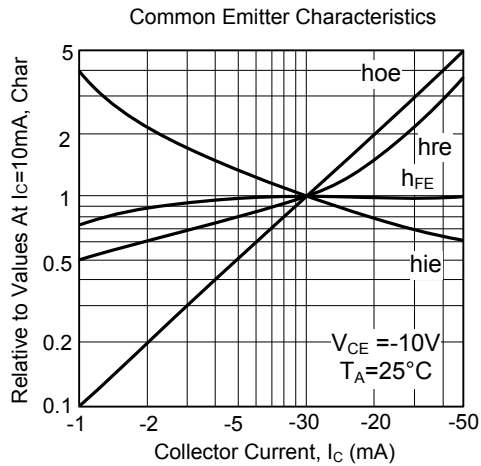
## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL COMMON EMITTER CHARACTERISTICS (f=1kHz)



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