

Discrete POWER & Signal Technologies

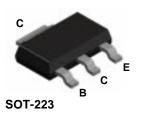
PN2907A

MMBT2907A

PZT2907A

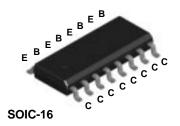


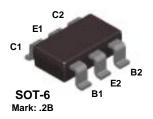




MMPQ2907

NMT2907





PNP General Purpose Amplifier

This device is designed for use as a general purpose amplifier and switch requiring collector currents to 500 mA. Sourced from Process 63.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	60	V
V _{CBO}	Collector-Base Voltage	60	V
V _{EBO}	Emitter-Base Voltage	5.0	V
I _C	Collector Current - Continuous	800	mA
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

^{*}These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES

1) These ratings are based on a maximum junction temperature of 150 degrees C.

²⁾ These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

(continued)

Electrica		

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Unit
OFF CHAI	RACTERISTICS				
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage*	$I_{\rm C} = 10 \text{ mA}, I_{\rm B} = 0$	60		V
V _{(BR)CBO}	Collector-Base Breakdown Voltage	$I_C = 10 \mu A, I_E = 0$	60		V
V _{(BR)EBO}	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}, I_C = 0$	5.0		V
l _B	Base Cutoff Current	$V_{CB} = 30 \text{ V}, V_{EB} = 0.5 \text{ V}$		50	nA
CEX	Collector Cutoff Current	$V_{CE} = 30 \text{ V}, V_{BE} = 0.5 \text{ V}$		50	nA
СВО	Collector Cutoff Current	$V_{CB} = 50 \text{ V}, I_{E} = 0$		0.02	μΑ
		$V_{CB} = 50 \text{ V}, I_E = 0, T_A = 150^{\circ}\text{C}$		20	μA
ON CHAR	ACTERISTICS				
1 _{FE}	DC Current Gain	$I_C = 0.1 \text{ mA}, V_{CE} = 10 \text{ V}$	75		
		$I_C = 1.0 \text{ mA}, V_{CE} = 10 \text{ V}$	100		
		$I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$	100		
		$I_C = 150 \text{ mA}, V_{CE} = 10 \text{ V}^*$	100	300	
	0 11 1 5 11 0 1 11 14 1	$I_C = 500 \text{ mA}, V_{CE} = 10 \text{ V}^*$	50	0.4	.,,
√ _{CE(sat)}	Collector-Emitter Saturation Voltage*	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$		0.4 1.6	V
\ /	Base-Emitter Saturation Voltage	$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$ $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}^*$		1.3	V
$V_{BE(sat)}$	base-Emilier Saturation Voltage	$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$		2.6	v
	•	, ,			
384811 OI	ONAL OLIADA OTEDIOTIOS				
	GNAL CHARACTERISTICS (excep			1	
f _T	Current Gain - Bandwidth Product	$I_C = 50 \text{ mA}, V_{CE} = 20 \text{ V},$	200		MHz
^	Output Capacitance	f = 100 MHz $V_{CB} = 10 \text{ V}, I_{E} = 0,$		8.0	pF
$C_{ m obo}$	Output Capacitance	$V_{CB} = 10 \text{ V}, I_{E} = 0,$ $f = 100 \text{ kHz}$		8.0	рг
C _{ibo}	Input Capacitance	$V_{EB} = 2.0 \text{ V}, I_{C} = 0,$		30	pF
-100		f = 100 kHz			
SWITCHII	NG CHARACTERISTICS (except MM	ADO2007 and NIMT2007)			
	Turn-on Time	$V_{CC} = 30 \text{ V}, I_{C} = 150 \text{ mA},$		45	ns
on				10	
d	Delay Time	$I_{B1} = 15 \text{ mA}$			ns
tr	Rise Time	V 00V L 450 VA		40	ns
toff	Turn-off Time	$V_{CC} = 6.0 \text{ V}, I_{C} = 150 \text{ mA}$		100	ns
ts	Storage Time	$I_{B1} = I_{B2} = 15 \text{ mA}$		80	ns
	Fall Time			30	

Spice Model

PNP (Is=650.6E-18 Xti=3 Eg=1.11 Vaf=115.7 Bf=231.7 Ne=1.829 Ise=54.81f Ikf=1.079 Xtb=1.5 Br=3.563 Nc=2 Isc=0 Ikr=0 Rc=.715 Cjc=14.76p Mjc=.5383 Vjc=.75 Fc=.5 Cje=19.82p Mje=.3357 Vje=.75 Tr=111.3n Tf=603.7p Itf=.65 Vtf=5 Xtf=1.7 Rb=10)

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Thermal Characteristics

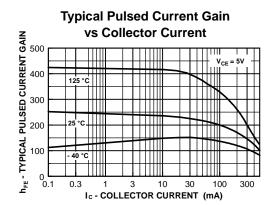
TA = 25°C unless otherwise noted

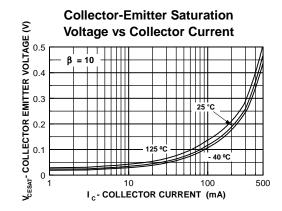
Symbol	Characteristic	Max		Units
		PN2907A	*PZT2907A	
P_D	Total Device Dissipation Derate above 25°C	625 5.0	1,000 8.0	mW mW/∘C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	125	°C/W

Symbol	Characteristic	Max		Units
		**MMBT2907A	MMPQ2907	
P _D	Total Device Dissipation	350	1,000	mW
	Derate above 25°C	2.8	8.0	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357		°C/W
	Effective 4 Die		125	°C/W
	Each Die		240	°C/W

^{*}Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min. 6 cm².

Typical Characteristics

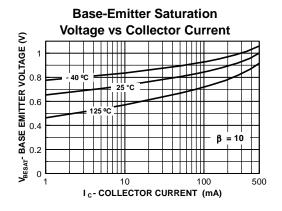


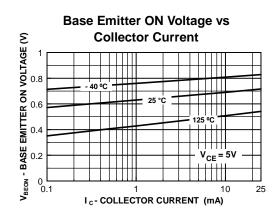


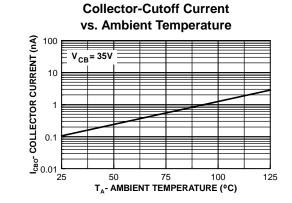
^{**}Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

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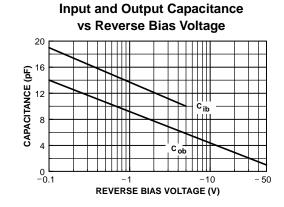
Typical Characteristics (continued)

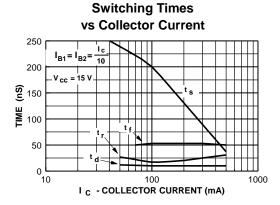


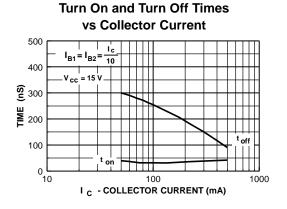




T_A- AMBIENT TEMPERATURE (°C)

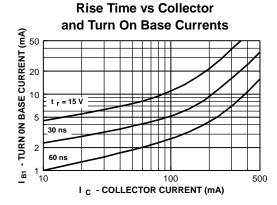


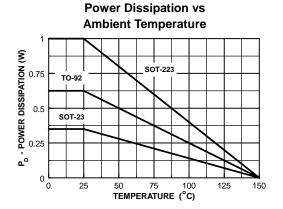




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Typical Characteristics (continued)





Test Circuits

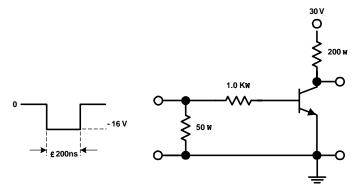


FIGURE 1: Saturated Turn-On Switching Time Test Circuit

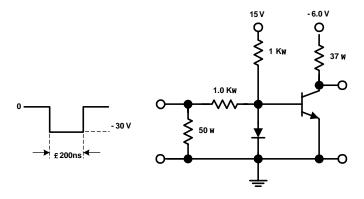


FIGURE 2: Saturated Turn-Off Switching Time Test Circuit

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