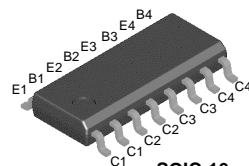


MMPQ2222

MMPQ2222

NPN Multi-Chip General Purpose Amplifier

- This device is for use as a medium power amplifier and switch requiring collector currents up to 500mA.
- Sourced from process 19.



SOIC-16
Mark: MMPQ2222

Absolute Maximum Ratings * $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	30	V
V_{CBO}	Collector-Base Voltage	60	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	500	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	- 55 ~ +155	$^\circ\text{C}$

* 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

Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 10\text{mA}, I_B = 0$	30		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}, I_E = 0$	60		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_C = 10\mu\text{A}, I_C = 0$	5.0		V
I_{CBO}	Collector Cutoff Current	$V_{CB} = 50\text{V}, I_E = 0$		50	nA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 3.0\text{V}, I_C = 0$		50	nA
On Characteristics *					
h_{FE}	DC Current Gain	$I_C = 10\text{mA}, V_{CE} = 10\text{V}$ $I_C = 150\text{mA}, V_{CE} = 1.0\text{V}^*$ $I_C = 150\text{mA}, V_{CE} = 1.0\text{V}^*$	75 100 50		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage *	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$		0.4 1.6	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage *	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$		1.3 2.6	V V
Small Signal Characteristics					
f_T	Current Gain Bandwidth Product	$I_C = 20\text{mA}, V_{CE} = 20\text{V},$ $f = 100\text{MHz}$		300	MHz
C_{obo}	Output Capacitance	$V_{CB} = 10\text{V}, I_E = 0, f = 100\text{kHz}$		4.0	pF
C_{ibo}	Input Capacitance	$V_{EB} = 0.5\text{V}, I_E = 0, f = 100\text{kHz}$		20	pF
NF	Noise Figure	$I_C = 100\mu\text{A}, V_{CE} = 10\text{V},$ $R_S = 1.0\text{k}\Omega, f = 1.0\text{kHz}$		2.0	dB

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$

Thermal Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation	1000	mW
	Derate above 25°C	8.0	$\text{mW}/^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		
	Effective 4 Die	125	$^\circ\text{C}/\text{W}$
	Each Die	240	$^\circ\text{C}/\text{W}$

Typical Characteristics

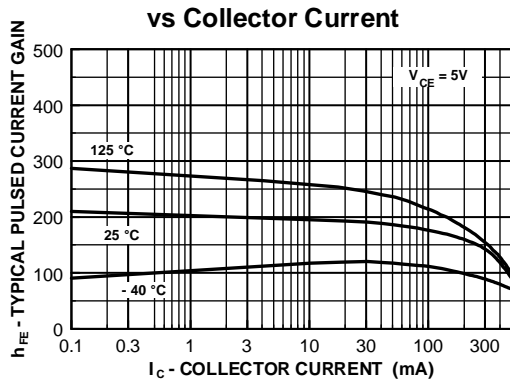


Figure 1. Typical Pulsed Current Gain vs Collector Current

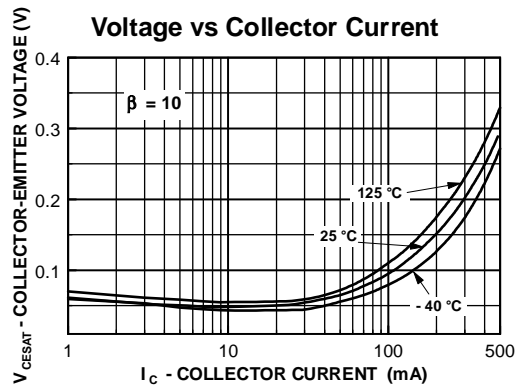


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

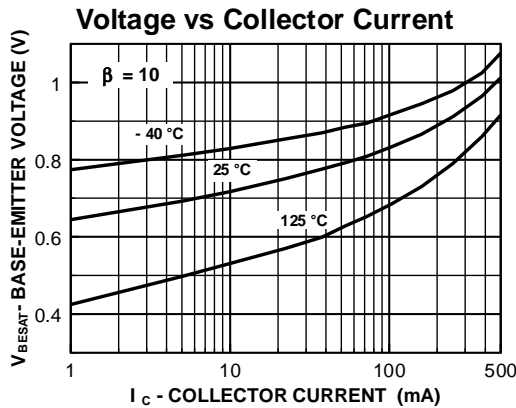


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

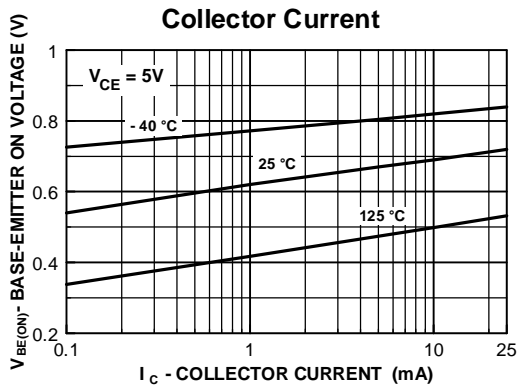


Figure 4. Base-Emitter On Voltage vs Collector Current

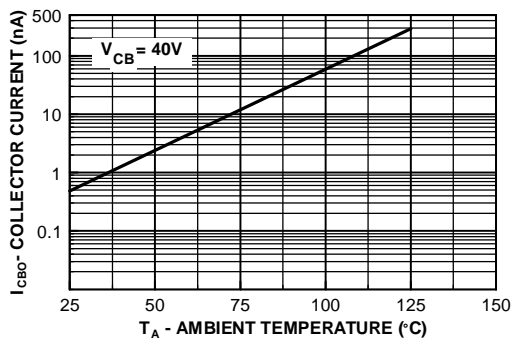


Figure 5. Collector Cutoff Current vs Ambient Temperature

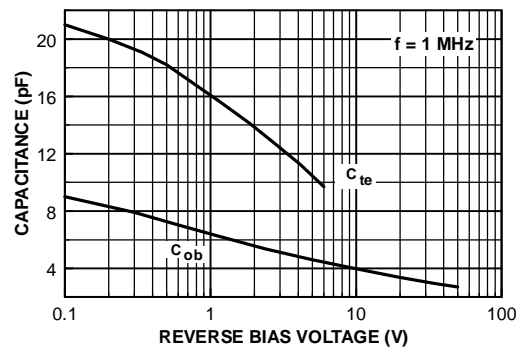


Figure 6. Emitter Transition and Output Capacitance vs Reverse Bias Voltage

Typical Characteristics (Continued)

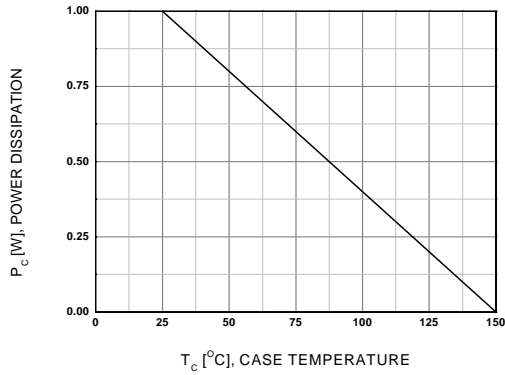


Figure 7. Power Dissipation vs Ambient Temperature

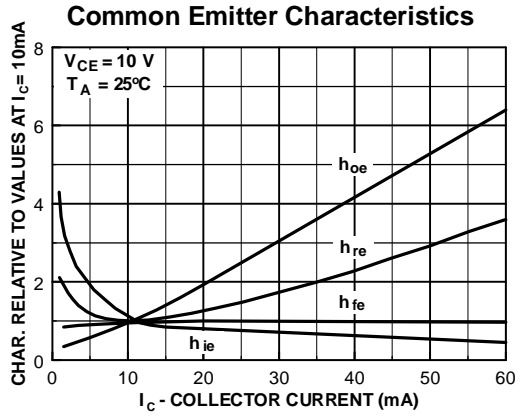


Figure 8. Common Emitter Characteristics

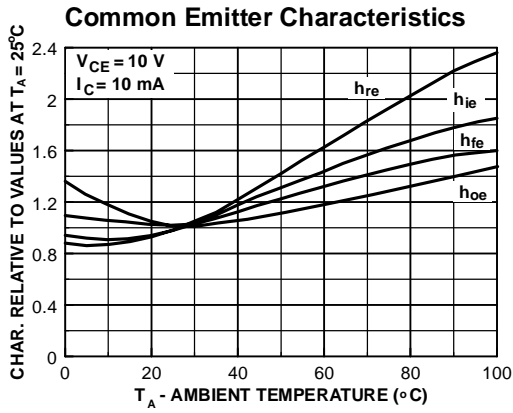


Figure 9. Common Emitter Characteristics

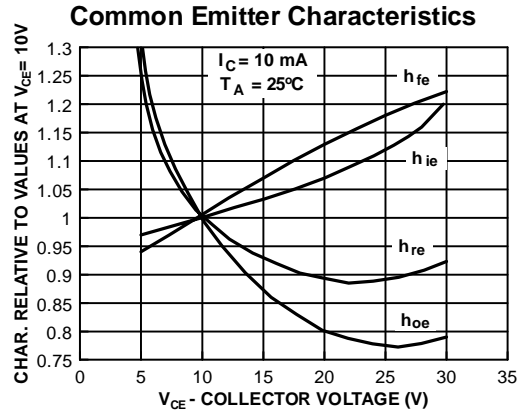


Figure 10. Common Emitter Characteristics

Test Circuit

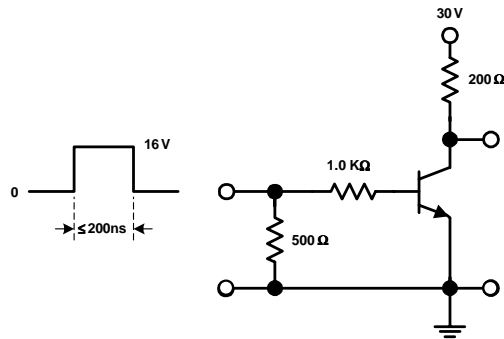


Figure 1. Saturated Turn-On Switching Time

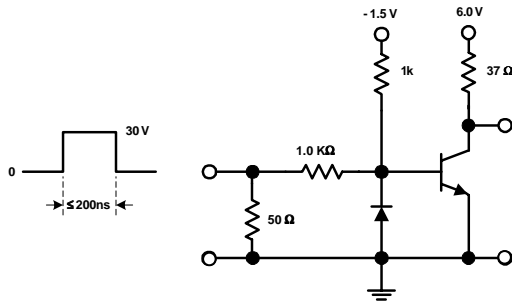
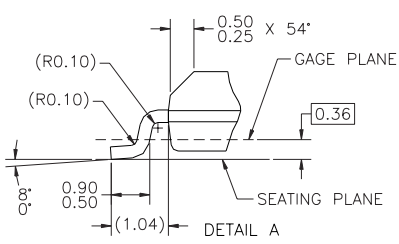
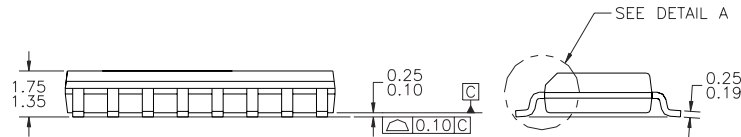
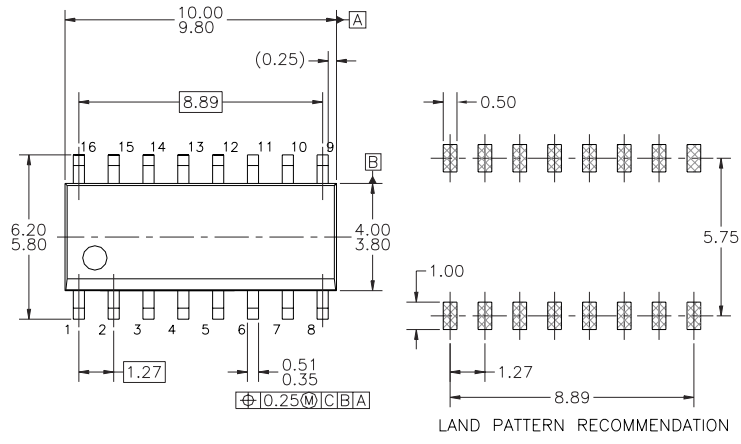


Figure 2. Saturated Turn-Off Switching Time

Package Dimensions

SOIC-16



- NOTES: UNLESS OTHERWISE SPECIFIED
- A) THIS PACKAGE CONFORMS TO JEDEC MS-012, VARIATION AC, ISSUE C, DATED MAY 1990.
 - B) ALL DIMENSIONS ARE IN MILLIMETERS.
 - C) STANDARD LEAD FINISH:
200 MICRONS / 5.08 MICRONS MIN. LEAD/TIN (SOLDER) ON COPPER.

Dimensions in Millimeters

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