



Micro Commercial Components



Micro Commercial Components
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2N2222
2N2222A

Features

- High current (max.800mA)
- Low voltage (max.40V)
- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix designates RoHS Compliant. See ordering information)

Maximum Ratings

Symbol	Rating	Rating	Unit
V_{CEO}	Collector-Emitter Voltage	2N2222	30
		2N2222A	40
V_{CBO}	Collector-Base Voltage	2N2222	60
		2N2222A	75
V_{EBO}	Emitter-Base Voltage	2N2222	5.0
		2N2222A	6.0
I_C	Collector Current (DC)	800	mA
I_{CM}	Peak Collector Current	800	mA
I_{BM}	Peak Base Current	200	mA
T_J	Operating Junction Temperature	-55 to +150	$^{\circ}C$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}C$

Thermal Characteristics

Symbol	Rating	Max	Unit
P_{Tot}	Total power Dissipation	500	mW
	$T_A \leq 25^{\circ}C$	1.2	W
	$T_C \leq 25^{\circ}C$		
R_{JC}	Thermal Resistance, Junction to Case	146	K/W
R_{JA}	Thermal Resistance, Junction to Ambient	350	K/W

Electrical Characteristics @ 25°C Unless Otherwise Specified

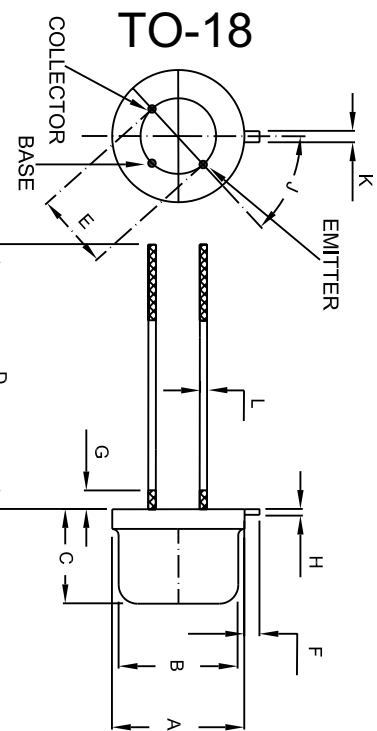
Symbol	Parameter	Min	Max	Units
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OFF CHARACTERISTICS

I_{CBO}	Collector cut-off current ($V_{CB}=50Vdc, I_E=0$)	2N2222	---	10	nAdc
	($V_{CB}=50Vdc, I_E=0, T_A=150^{\circ}C$)		---	10	uAdc
	($V_{CB}=60Vdc, I_E=0$)	2N2222A	---	10	nAdc
	($V_{CB}=60Vdc, I_E=0, T_A=150^{\circ}C$)		---	10	uAdc
I_{EBO}	Emitter Cut-off current ($I_C=0, V_{EB}=3Vdc$)		---	10	nAdc
h_{FE}	DC Current Gain ($I_C=0.1mAdc, V_{CE}=10Vdc$)		35		
	($I_C=1.0mAdc, V_{CE}=10Vdc$)		50		
	($I_C=10mAdc, V_{CE}=10Vdc$)		75		
	($I_C=150mAdc, V_{CE}=1.0Vdc$)*		50		
	($I_C=150mAdc, V_{CE}=10Vdc$)*		100	300	
h_{FE}	DC Current Gain ($I_C=500mAdc, V_{CE}=10Vdc$) *	2N2222	30	---	
		2N2222A	40	---	

Notes:1.High Temperature Solder Exemption Applied, see EU Directive Annex 7.

NPN Switching Transistors



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.209	.230	5.309	5.842	Φ
B	.178	.195	4.521	4.953	Φ
C	.170	.210	4.318	5.334	
D	.50	----	12.7	----	
E	.100		2.54		Φ TYP
F	.028	.048	.7112	1.219	
G	----	.050	----	1.27	
H	.009	.031	0.229	0.787	
J	44°	46°	44°	46°	
K	.036	.046	0.914	1.168	
L	.016	.021	0.406	0.533	

2N2222, 2N2222A

Symbol	Parameter	Min	Max	Units	
ON CHARACTERISTICS*					
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ⁸ ($I_C=150\text{mA}$, $I_B=15\text{mA}$) ($I_C=500\text{mA}$, $I_B=50\text{mA}$)	2N2222	---	400	mVdc
			---	1.6	Vdc
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage* ($I_C=150\text{mA}$, $I_B=15\text{mA}$) ($I_C=500\text{mA}$, $I_B=50\text{mA}$)	2N2222A	---	300	mVdc
			---	1.0	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage * ($I_C=150\text{mA}$, $I_B=15\text{mA}$) ($I_C=500\text{mA}$, $I_B=50\text{mA}$)	2N2222	---	1.3	Vdc
			---	2.6	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage* ($I_C=150\text{mA}$, $I_B=15\text{mA}$) ($I_C=500\text{mA}$, $I_B=50\text{mA}$)	2N2222A	0.6	1.2	Vdc
			---	2.0	Vdc

SMALL-SIGNAL CHARACTERISTICS

C_{OB}	Output Capacitance ($V_{CB}=10\text{Vdc}$, $I_E=I_E=0$, $f=1.0\text{MHz}$)		---	8.0	pF
f_T	Transition Frequency ($V_{CE}=20\text{Vdc}$, $I_C=20\text{mA}$, $f=100\text{MHz}$)	2N2222	250	---	MHz
		2N2222A	300	---	MHz
NF	Noise Figure ($V_{CE}=5.0\text{Vdc}$, $I_C=200\mu\text{A}$, $R_s=2.0\text{KOHM}$, $f=1.0\text{kHz}$, $B=200\text{Hz}$)	2N2222A	---	4.0	dB

SWITCHING CHARACTERISTICS

T_d	Delay Time	$I_{CON}=150\text{mA}$, $I_{BON}=15\text{mA}$, $I_{B(off)}=15\text{mA}$	---	10	ns
t_r	Rise Time		---	25	ns
t_s	Storage Time		---	200	ns
t_f	Fall Time		---	60	ns

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



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Ordering Information :

Device	Packing
Part Number-BP	Bulk; 100pcs/Box

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