Shanghai Lunsure Electronic
Technology Co.,Ltd
Tel:0086-21-37185008
Fax:0086-21-57152769

2N2222
2N2222A

NPN Switching Transistors

Features

- High current (max.800mA)
- Low voltage (max.40V)

Maximum Ratings

Symbol	Rating		Rating	Unit
V_{CEO}	Collector-Emitter Voltage	2N2222 2N2222A	30 40	V
V_{CBO}	Collector-Base Voltage	2N2222 2N2222A	60 75	V
V_{EBO}	Emitter-Base Voltage	2N2222 2N2222A	5.0 6.0	V
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	°C
T_{STG}	Storage Temperature		-55 to +150	°C

Thermal Characteristics

Symbol	Rating	Max	Unit
P_{tot}	Total power Dissipation $T_A \leqq 25℃$ $T_C \leqq 25℃$	 500 1.2	 mW W
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
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℃)		---	10	uAdc
	(V_{CB}=60Vdc, I_E=0)	2N2222A	---	10	nAdc
	(V_{CB}=60Vdc, I_E=0,T_A=150℃)		---	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	---	

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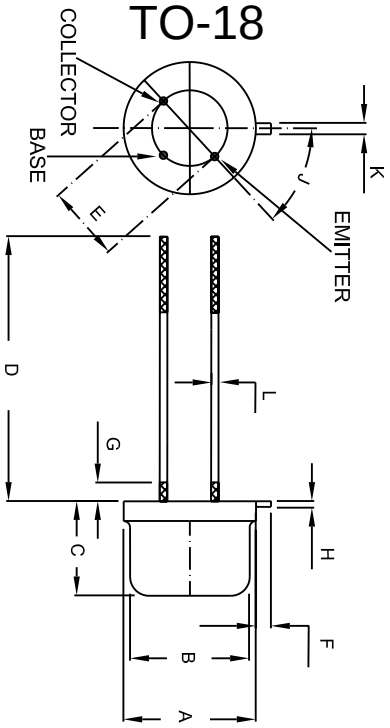

DIMENSIONS					
	INCHES		MM		
DIM	MIN	MAX	MIN	MAX	NOTE
A	.209	.230	5.309	5.842	Φ
B	.178	.195	4.521	4.953	Φ
C	.170	.210	4.318	5.334	
D	.50	.75	12.7	19.05	
E	.100		2.54		ΦTYP
F	.028	.048	7.112	1.219	
G	-----	.050	-----	1.27	
H	.009	.031	0.229	0.787	
J	44°	46°	44°	46°	
K	.036	.046	0.914	1.168	
L	.016	.021	0.406	0.533	

2N2222,2N2222A

Symbol	Parameter		Min	Max	Units
ON CHARACTERISTICS*					
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage8 (I_C=150mAdc, I_B=15mAdc) (I_C=500mAdc, I_B=50mAdc)	2N2222	--- ---	400 1.6	mVdc Vdc
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage* (I_C=150mAdc, I_B=15mAdc) (I_C=500mAdc, I_B=50mAdc)	2N2222A	--- ---	300 1.0	mVdc Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage * (I_C=150mAdc, I_B=15mAdc) (I_C=500mAdc, I_B=50mAdc)	2N2222	--- ---	1.3 2.6	Vdc Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage* (I_C=150mAdc, I_B=15mAdc) (I_C=500mAdc, I_B=50mAdc)	2N2222A	0.6 ---	1.2 2.0	Vdc Vdc
SMALL-SIGNAL CHARACTERISTICS					
C_{OB}	Output Capacitance (V_{CB}=10Vdc,I_E=ie=0, f=1.0MHz)		---	8.0	pF
f_T	TransitionFrequency (V_{CE}=20Vdc,I_C=20mAdc, f=100MHz)	2N2222 2N2222A	250 300	--- ---	MHz MHz
NF	Noise Figure (V_{CE}=5.0Vdc,I_C=200uAdc, Rs=2.0KOHM,f=1.0kHz,B=200Hz)	2N2222A	---	4.0	dB
SWITCHING CHARACTERISTICS					
T_d	Delay Time	I_{CON}=150mAdc, I_{BON}=15mAdc, $I_{B(off)}$=15mAdc	---	10	ns
t_r	Rise Time		---	25	ns
t_s	Storage Time		---	200	ns
t_f	Fall Time		---	60	ns

* Pulse Test: tp≦300us, Duty Cycle≦2.0%