



Micro Commercial Components



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MMDT2222A

Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epitaxial Die Construction
- Small Surface Mount Package
- Marking: K1P
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings @ 25°C Unless Otherwise Specified

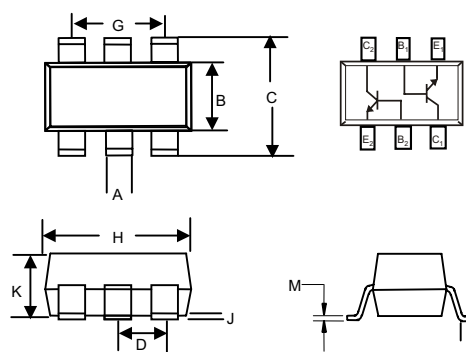
Symbol	Rating	Rating	Unit
V_{CEO}	Collector-Emitter Voltage	40	V
V_{CBO}	Collector-Base Voltage	75	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current-Continuous	0.6	A
P_C	Collector Dissipation	0.15	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	833	°C/W
T_J	Operating Junction Temperature	-55 to +150	°C
T_{STG}	Storage Temperature	-55 to +150	°C

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Typ	Max	Units
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage ($I_C=10\text{mA}$, $I_B=0$)	40	---	---	Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_C=10\text{uA}$, $I_E=0$)	75	---	---	Vdc
$V_{(BR)EBO}$	Collector-Emitter Breakdown Voltage ($I_E=10\text{uA}$, $I_C=0$)	6	---	---	Vdc
I_{CBO}	Collector Cutoff Current ($V_{CB}=60\text{Vdc}$, $I_E=0\text{Vdc}$)	---	---	10	nAdc
I_{CEX}	Collector Cutoff Current ($V_{CE}=60\text{Vdc}$, $V_{EB(OFF)}=3\text{Vdc}$)	---	---	10	nAdc
I_{EBO}	Emitter Cutoff Current ($V_{EB}=3\text{Vdc}$, $I_C=0\text{Vdc}$)	---	---	10	nAdc
I_{BL}	Base Cutoff Current ($V_{CE}=60\text{Vdc}$, $V_{EB(OFF)}=3\text{Vdc}$)	---	---	20	nAdc
h_{FE}	DC Current Gain ($I_C=0.1\text{mA}$, $V_{CE}=10\text{Vdc}$) ($I_C=1\text{mA}$, $V_{CE}=10\text{Vdc}$) ($I_C=10\text{mA}$, $V_{CE}=10\text{Vdc}$) ($I_C=150\text{mA}$, $V_{CE}=10\text{Vdc}$) ($I_C=500\text{mA}$, $V_{CE}=10\text{Vdc}$) ($I_C=150\text{mA}$, $V_{CE}=1\text{Vdc}$)	35 50 75 100 40 35	---	---	---
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_C=150\text{mA}$, $I_B=15\text{mA}$) ($I_C=500\text{mA}$, $I_B=50\text{mA}$)	---	---	0.3 1.0	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ($I_C=150\text{mA}$, $I_B=15\text{mA}$) ($I_C=500\text{mA}$, $I_B=50\text{mA}$)	0.6 ---	---	1.2 2.0	Vdc

NPN Plastic-Encapsulate Transistors

SOT-363



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.006	.014	0.15	0.35	
B	.045	.053	1.15	1.35	
C	.085	.096	2.15	2.45	
D	.026		0.65Nominal		
G	.047	.055	1.20	1.40	
H	.071	.087	1.80	2.20	
J	---	.004	---	0.10	
K	.035	.043	0.90	1.10	
L	.010	.018	0.26	0.46	
M	.003	.006	0.08	0.15	

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Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter		Min	Typ	Max	Units
f_T	Transition Frequency ($V_{CE}=20V_{dc}$, $I_C=20mA_{dc}$, $f=100MHz$)		300	---	---	MHz
C_{ob}	Output Capacitance ($V_{CB}=10V_{dc}$, $f=1.0MHz$, $I_E=0$)		---	---	8	pF
NF	Noise Figure ($V_{CE}=10V$, $I_C=0.1mA$, $f=1KHz$, $R_S=1k\Omega$, $BW=200Hz$)		---	---	4	dB
t_d	Delay Time	$V_{CC}=30V$, $I_C=150mA$, $V_{BE(off)}=-0.5V$, $I_{B1}=15mA$	---	---	10	ns
t_r	Rise Time		---	---	25	ns
t_s	Storage Time	$V_{CC}=30V$, $I_C=150mA$, $I_{B1}=I_{B2}=15mA$	---	---	225	ns
t_f	Fall Time		---	---	60	ns

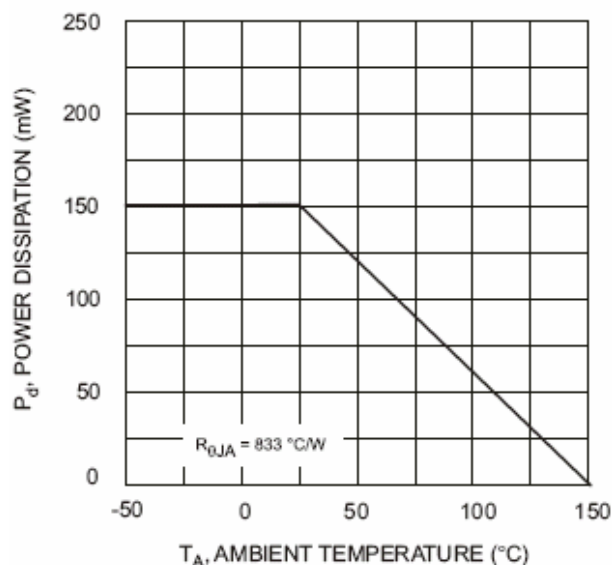


Fig. 1, Derating Curve - Total

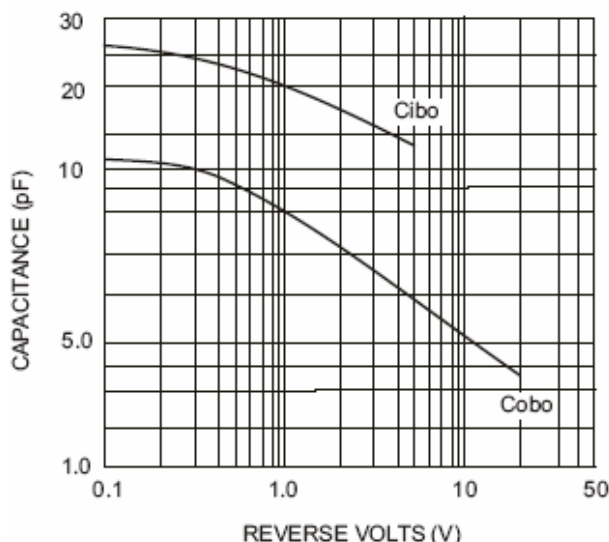


Fig. 3 Typical Capacitance

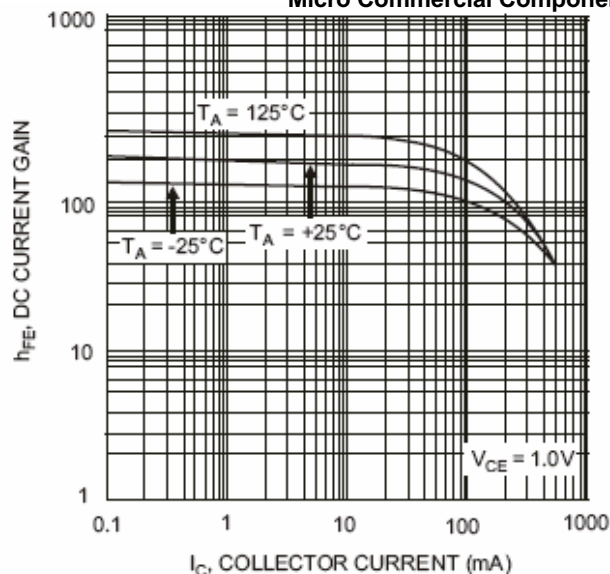


Fig. 2 Typical DC Current Gain vs Collector Current

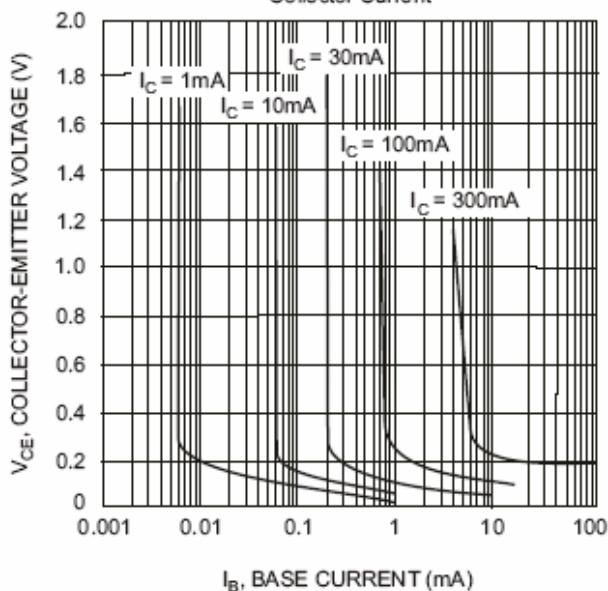


Fig. 4 Typical Collector Saturation Region

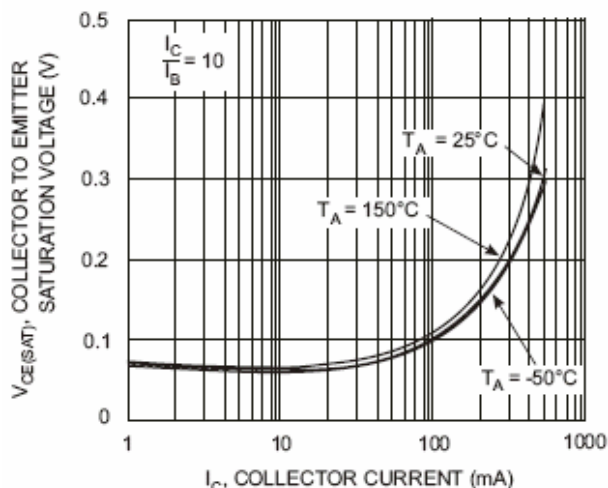


Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current

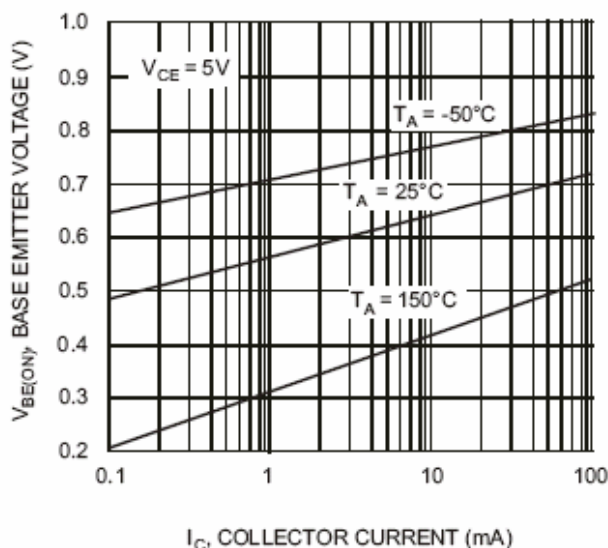


Fig. 6 Base Emitter Voltage vs. Collector Current

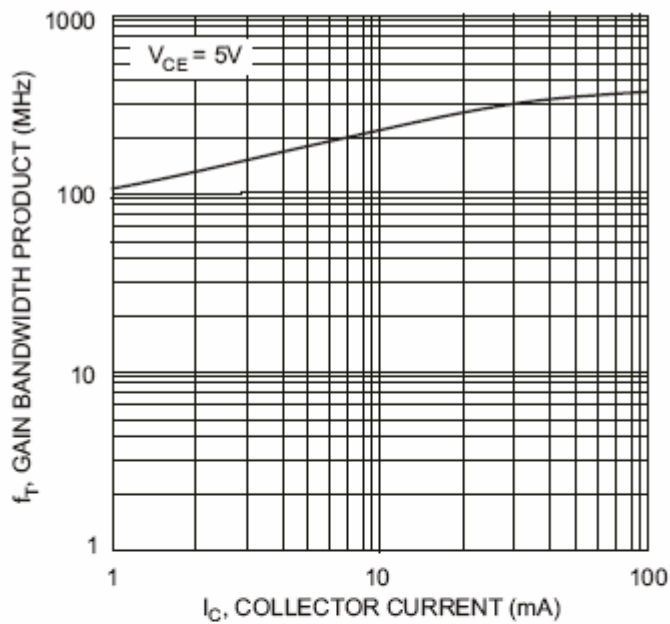


Fig. 7 Gain Bandwidth Product vs. Collector Current

Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel; 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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