



**TRANSYS
ELECTRONICS
LIMITED**

MMDT2222A

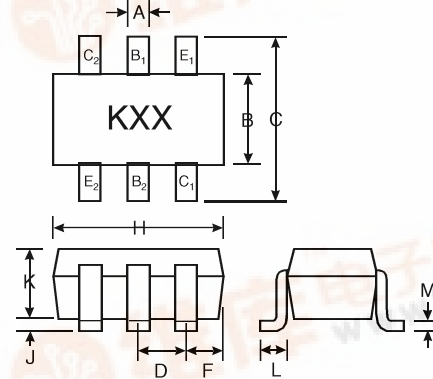
DUAL NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (MMDT2907A)
- Ultra-Small Surface Mount Package

Mechanical Data

- Case: SOT-363, Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: K1P
- Weight: 0.006 grams (approx.)



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J	0.10	
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
All Dimensions in mm		

Maximum Ratings @ T_A = 25 C unless otherwise specified

Characteristic	Symbol	MMDT2222A	Unit
Collector-Base Voltage	V _{CBO}	75	V
Collector-Emitter Voltage	V _{CEO}	40	V
Emitter-Base Voltage	V _{EBO}	6.0	V
Collector Current - Continuous (Note 1)	I _C	600	mA
Power Dissipation (Note 1)	P _d	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	R _{JA}	625	K/W
Operating and Storage and Temperature Range	T _J , T _{STG}	-55 to +150	C

- Note:
- Valid provided that terminals are kept at ambient temperature.
 - Pulse test: Pulse width 300 s, duty cycle 2%.

Electrical Characteristics @ $T_A = 25\text{ C}$ unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 2)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	75		V	$I_C = 10\text{ A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40		V	$I_C = 10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6.0		V	$I_E = 10\text{ A}, I_C = 0$
Collector Cutoff Current	I_{CBO}		10	nA A	$V_{CB} = 60\text{V}, I_E = 0$ $V_{CB} = 60\text{V}, I_E = 0, T_A = 150\text{ C}$
Collector Cutoff Current	I_{CEX}		10	nA	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3.0\text{V}$
Emitter Cutoff Current	I_{EBO}		10	nA	$V_{EB} = 3.0\text{V}, I_C = 0$
Base Cutoff Current	I_{BL}		20	nA	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3.0\text{V}$
ON CHARACTERISTICS (Note 2)					
DC Current Gain	h_{FE}	35 50 75 100 40 50 35	300		$I_C = 100\text{ A}, V_{CE} = 10\text{V}$ $I_C = 1.0\text{mA}, V_{CE} = 10\text{V}$ $I_C = 10\text{mA}, V_{CE} = 10\text{V}$ $I_C = 150\text{mA}, V_{CE} = 10\text{V}$ $I_C = 500\text{mA}, V_{CE} = 10\text{V}$ $I_C = 10\text{mA}, V_{CE} = 10\text{V}, T_A = -55\text{ C}$ $I_C = 150\text{mA}, V_{CE} = 1.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		0.3 1.0	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
Base- Emitter Saturation Voltage	$V_{BE(SAT)}$	0.6	1.2 2.0	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{obo}		8	pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}, I_E = 0$
Input Capacitance	C_{ibo}	—	25	pF	$V_{EB} = 0.5\text{V}, f = 1.0\text{MHz}, I_C = 0$
Current Gain-Bandwidth Product	f_T	300		MHz	$V_{CE} = 20\text{V}, I_C = 20\text{mA},$ $f = 100\text{MHz}$
Noise Figure	NF		4.0	dB	$V_{CE} = 10\text{V}, I_C = 100\text{ A},$ $R_S = 1.0\text{k}\quad f = 1.0\text{kHz}$
SWITCHING CHARACTERISTICS					
Delay Time	t_d		10	ns	$V_{CC} = 30\text{V}, I_C = 150\text{mA},$ $V_{BE(off)} = -0.5\text{V}, I_{B1} = 15\text{mA}$
Rise Time	t_r		25	ns	
Storage Time	t_s		225	ns	$V_{CC} = 30\text{V}, I_C = 150\text{mA},$ $I_{B1} = I_{B2} = 15\text{mA}$
Fall Time	t_f		60	ns	

- Note: 1. Valid provided that terminals are kept at ambient temperature.
2. Pulse test: Pulse width 300 μ s, duty cycle 2%.