



MMDT2222A

DUAL TRANSISTOR

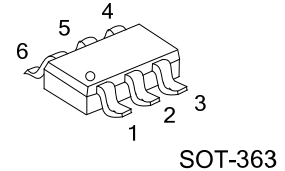
DUAL NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

DESCRIPTION

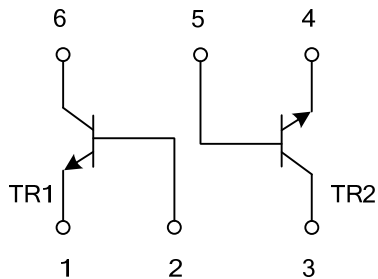
The UTC **MMDT2222A** is a Dual NPN small signal surface mount transistor. It's suitable for low power amplification and switch.

FEATURES

- * Suitable for Low Power Amplification and Switching
- * Epitaxial Planar Die Construction
- * Extremely-Small Surface Mount Package



EQUIVALENT CIRCUIT



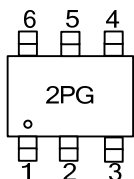
ORDERING INFORMATION

Ordering Number	Package	Pin Assignment						Packing
		1	2	3	4	5	6	
MMDT2222AG-AL6-R	SOT-363	E1	B1	C2	C1	B2	E2	Tape Reel

Note: Pin Assignment: E: Emitter B: Base C: Collector

MMDT2222AG-AL6-R	(1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AL6: SOT-363 (3) G: Halogen Free and Lead Free
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MARKING



■ **ABSOLUTE MAXIMUM RATINGS** ($T_A=25^{\circ}\text{C}$, unless otherwise specified.)

PARAMETER	SYMBOL	RATINGS	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	I_C	600	mA
Power Dissipation (Note 2)	P_D	200	mW
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Maximum combined dissipation.

■ **THERMAL DATA** ($T_A=25^{\circ}\text{C}$, unless otherwise specified.)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	625	$^{\circ}\text{C/W}$

■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^{\circ}\text{C}$, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS (Note)						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	75			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	40			V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6.0			V
Collector-Current	I_{CBO}	$V_{CB}=60V, I_E=0$			10	nA
		$V_{CB}=60V, I_E=0, T_A=150^{\circ}C$			10	μA
Collector- Current	I_{CEX}	$V_{CE}=60V, V_{EB(OFF)}=3.0V$			10	nA
Emitter- Current	I_{EBO}	$V_{EB}=3.0V, I_C=0$			10	nA
Base- Current	I_{BL}	$V_{CE}=60V, V_{EB(OFF)}=3.0V$			20	nA
ON CHARACTERISTICS (Note)						
DC Current Gain	h_{FE}	$I_C=100\mu A, V_{CE}=10V$	35			
		$I_C=1.0mA, V_{CE}=10V$	50			
		$I_C=10mA, V_{CE}=10V$	75			
		$I_C=150mA, V_{CE}=10V$	100		300	
		$I_C=500mA, V_{CE}=10V$	40			
		$I_C=10mA, V_{CE}=10V, T_A=-55^{\circ}C$	50			
		$I_C=150mA, V_{CE}=1.0V$	35			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=150mA, I_B=15mA$			0.3	V
		$I_C=500mA, I_B=50mA$			1.0	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=150mA, I_B=15mA$	0.6		1.2	V
		$I_C=500mA, I_B=50mA$			2.0	V
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{OBO}	$V_{CB}=10V, f=1.0MHz, I_E=0$			8	pF
Input Capacitance	C_{IBO}	$V_{EB}=0.5V, f=1.0MHz, I_C=0$			25	pF
Current Gain-Bandwidth Product	f_T	$V_{CE}=20V, I_C=20mA, f=100MHz$	300			MHz
Noise Figure	NF	$V_{CE}=10V, I_C=100\mu A, R_S=1.0k\Omega, f=1.0kHz$			4.0	dB
SWITCHING CHARACTERISTICS						
Delay Time	t_D	$V_{CC}=30V, I_C=150mA, V_{BE(OFF)}=-0.5V,$			10	ns
Rise Time	t_R	$I_{B1}=15mA$			25	ns
Storage Time	t_S	$V_{CC}=30V, I_C=150mA, I_{B1}=I_{B2}=15mA$			225	ns
Fall Time	t_F				60	ns

Note: Short duration pulse test used to minimize self-heating effect.

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