



<u>MMDT2222A</u>

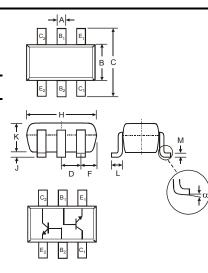
DUAL NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (MMDT2907A)
- Lead Free/RoHS Compliant (Note 2)
- "Green" Device (Note 3 and 4)

Mechanical Data

- Case: SOT-363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe)
- Terminal Connections: See Diagram
- Marking Information: K1P, See Page 4
- Ordering & Date Code Information: See Page 4
- Weight: 0.006 grams (approximate)



SOT-363								
Dim	Min	Мах						
Α	0.10	0.30						
В	1.15	1.35						
С	2.00 2.20							
D	0.65 N	0.65 Nominal						
F	0.30	0.40						
н	1.80	2.20						
J	—	0.10						
κ	0.90	1.00						
L	0.25	0.40						
М	0.10	0.25						
α	0°	8°						
All Dir	nensions	in mm						

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	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)	lc	600	mA
Total Power Dissipation (Note 1)	Pd	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	R _{0JA}	625	°C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

Notes: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.

2. No purposefully added lead.

3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

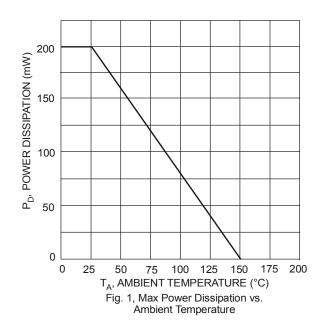
4. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

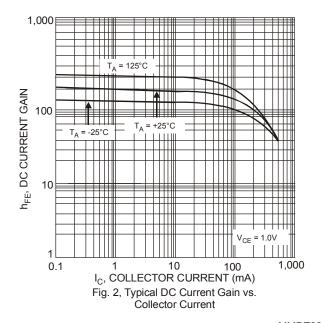


Electrical Characteristics @T_A = 25°C unless otherwise specified

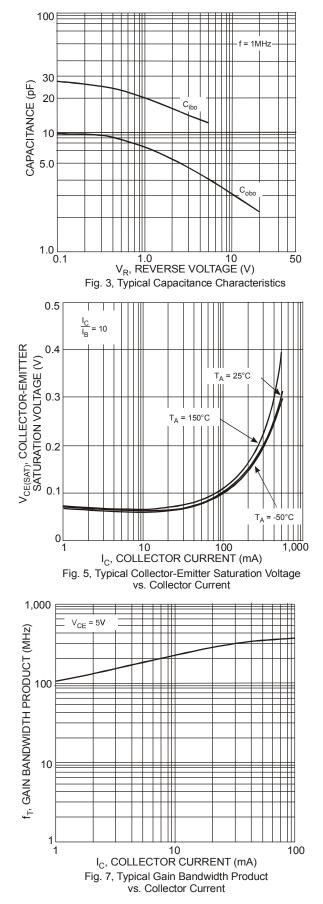
Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)	-,				1
Collector-Base Breakdown Voltage	V _{(BR)CBO}	75	_	V	$I_{\rm C} = 10 \mu A, I_{\rm E} = 0$
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	40	_	V	I _C = 10mA, I _B = 0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	6.0	_	V	$I_{\rm E} = 10 \mu A, I_{\rm C} = 0$
Collector Cutoff Current	I _{CBO}	_	10	nA μA	V _{CB} = 60V, I _E = 0 V _{CB} = 60V, I _E = 0, T _A = 150°C
Collector Cutoff Current	ICEX	_	10	nA	$V_{CE} = 60V, V_{EB(OFF)} = 3.0V$
Emitter Cutoff Current	I _{EBO}	_	10	nA	V _{EB} = 3.0V, I _C = 0
Base Cutoff Current	I _{BL}		20	nA	$V_{CE} = 60V, V_{EB(OFF)} = 3.0V$
ON CHARACTERISTICS (Note 5)			_		
DC Current Gain	h _{FE}	35 50 75 100 40 50 35	 300 	_	$\begin{split} I_{C} &= 100 \mu A, V_{CE} = 10V \\ I_{C} &= 1.0 m A, V_{CE} = 10V \\ I_{C} &= 10 m A, V_{CE} = 10V \\ I_{C} &= 150 m A, V_{CE} = 10V \\ I_{C} &= 500 m A, V_{CE} = 10V \\ I_{C} &= 10 m A, V_{CE} = 10V, T_{A} = -55^{\circ}C \\ I_{C} &= 150 m A, V_{CE} = 1.0V \end{split}$
Collector-Emitter Saturation Voltage	V _{CE(SAT)}		0.3 1.0	v	I_{C} = 150mA, I_{B} = 15mA I_{C} = 500mA, I_{B} = 50mA
Base-Emitter Saturation Voltage		0.6	1.2 2.0	V	I _C = 150mA, I _B = 15mA I _C = 500mA, I _B = 50mA
SMALL SIGNAL CHARACTERISTICS			•		·
Output Capacitance	C _{obo}	_	8	pF	V _{CB} = 10V, f = 1.0MHz, I _E = 0
Input Capacitance	Cibo	_	25	pF	V _{EB} = 0.5V, f = 1.0MHz, I _C = 0
Current Gain-Bandwidth Product	f _T	300	_	MHz	V_{CE} = 20V, I _C = 20mA, f = 100MHz
Noise Figure	NF	_	4.0	dB	V _{CE} = 10V, I _C = 100μA, R _S = 1.0kΩ, f = 1.0kHz
SWITCHING CHARACTERISTICS	1 1		•		
Delay Time	t _d		10	ns	V _{CC} = 30V, I _C = 150mA,
Rise Time	tr	_	25	ns	V _{BE(off)} = - 0.5V, I _{B1} = 15mA
Storage Time	ts		225	ns	V _{CC} = 30V, I _C = 150mA,
Fall Time	tf	_	60	ns	$I_{B1} = I_{B2} = 15 \text{mA}$

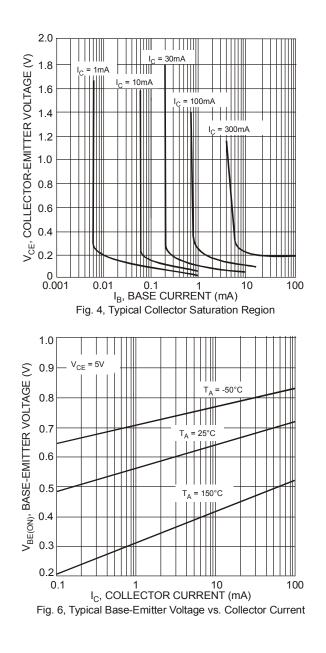
Notes: 5. Short duration pulse test used to minimize self-heating effect.











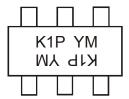


Ordering Information (Note 6)

Device	Packaging	Shipping			
MMDT2222A-7-F	SOT-363	3000/Tape & Reel			

Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



K1P = Product Type Marking Code YM = Date Code Marking Y = Year ex: N = 2002 M = Month ex: 9 = September

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	к	L	М	Ν	Р	R	S	Т	U	V	W	Х	Y	Z
Month	Jan	Fe	b	Mar	Apr	Мау	Ju	n	Jul	Aug	Sep	Oc	t	Nov	Dec

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