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Contact us

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Lead-free Green

MMDT5401

150V DUAL PNP SMALL SIGNAL TRANSISTOR IN SOT363

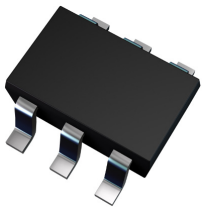
Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (MMDT5551)
- Ideal for Medium Power Amplification and Switching
- Ultra-Small Surface Mount Package
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

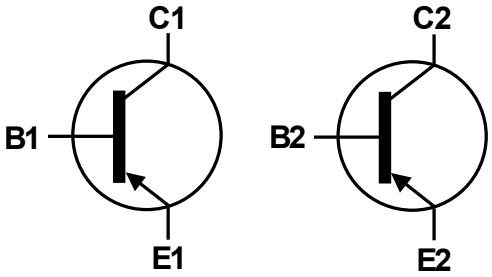
Mechanical Data

- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound,
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin Finish. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (approximate)

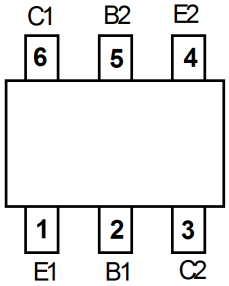
SOT363



Top View



Device Symbol



Top View
Pin-Out

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
MMDT5401-7-F	K4M	7	8	3,000

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http"//www.diodes.com/products/packages.html.

Marking Information

K4M = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: N = 2002
M = Month ex: 9 = September

Date Code Key

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
Code	W	X	Y	Z	A	B	C	D	E

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-160	V
Collector-Emitter Voltage	V_{CEO}	-150	V
Emitter-Base Voltage	V_{EBO}	-6	V
Continuous Collector Current	I_C	-200	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	200	mW
	(Notes 6 & 7)		320	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	625	°C/W
	(Notes 6 & 7)		390	
Thermal Resistance, Junction to Case	(Note 8)	$R_{\theta JC}$	140	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	-160	—	—	V	I_C = -100µA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-150	—	—	V	I_C = -1mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	I_E = -100µA, I_C = 0
Collector-Base Cutoff Current	I_{CBO}	—	—	-50	nA	V_{CB} = -120V, I_E = 0
		—	—	-50	µA	V_{CB} = -120V, I_E = 0, T_A = +100°C
Base-Emitter Cutoff Current	I_{EBO}	—	—	-50	nA	V_{EB} = -5V, I_C = 0
ON CHARACTERISTICS (Note 9)						
DC Current Gain	h_{FE}	50	—	—	—	I_C = -1.0mA, V_{CE} = -5.0V
		60		240		I_C = -10mA, V_{CE} = -5.0V
		50		—		I_C = -50mA, V_{CE} = -5.0V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.2	V	I_C = -10mA, I_B = -1.0mA
				-0.5		I_C = -50mA, I_B = -5.0mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.0	V	I_C = -10mA, I_B = -1.0mA
						I_C = -50mA, I_B = -5.0mA
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	—	6.0	pF	V_{CB} = -10V, f = 1.0MHz, I_E = 0
Small Signal Current Gain	h_{fe}	40	—	200	—	I_C = -1mA, V_{CE} = -10V, f = 1.0MHz
Current Gain-Bandwidth Product	f_T	100	—	300	MHz	I_C = -10mA, V_{CE} = -10V, f = 100MHz
Noise Figure	NF	—	—	8.0	dB	V_{CE} = -5.0V, I_C = -200µA, R_S = 10Ω, f = 1.0kHz

Notes:
5. For a device mounted on minimum recommended pad layout 1oz weight copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Same as Note 5, except the device is mounted 25mm X 25mm 2oz copper.
7. Maximum combined dissipation.
8. Thermal resistance from junction to the top of package.
9. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

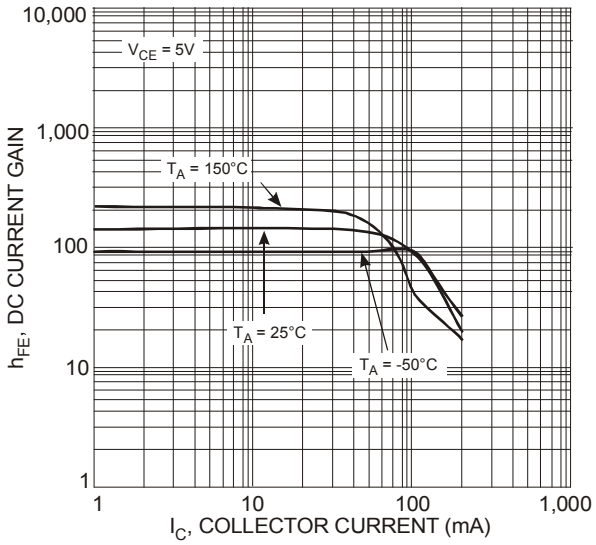


Fig. 1 Typical DC Current Gain vs. Collector Current

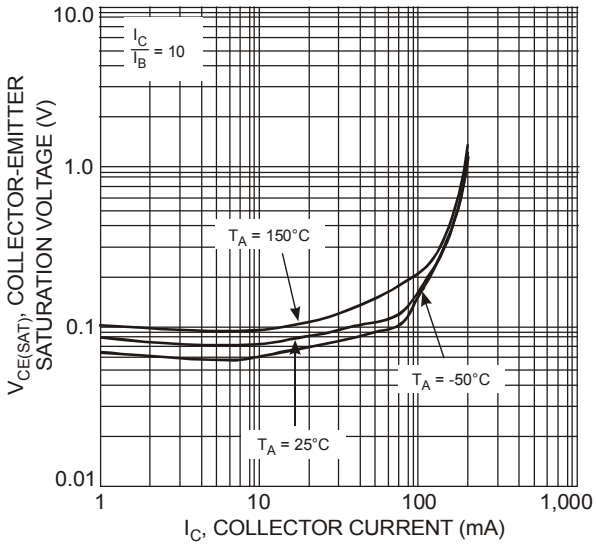


Fig. 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current

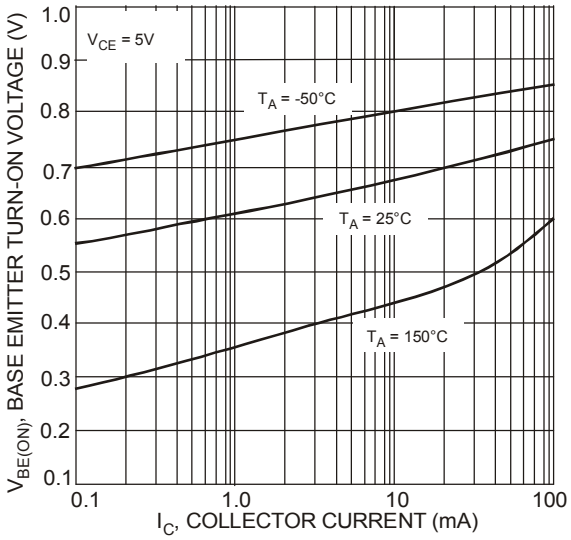


Fig. 3 Typical Base-Emitter Turn-On Voltage vs. Collector Current

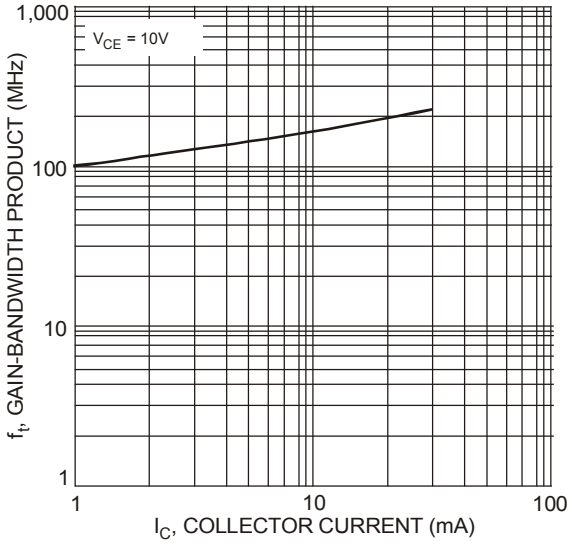
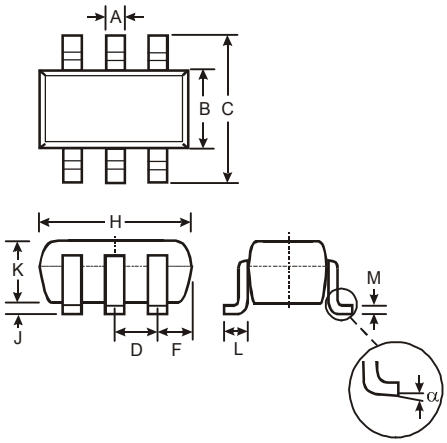


Fig. 4 Typical Gain-Bandwidth Product vs Collector Current

Package Outline Dimensions

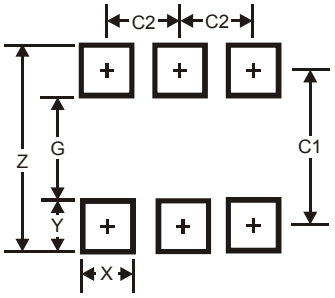
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT363			
Dim	**Min**	**Max**	**Typ**
A	0.10	0.30	0.25
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	0.65 Typ		
F	0.40	0.45	0.425
H	1.80	2.20	2.15
J	0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.22	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C1	1.9
C2	0.65

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