Lead-free Green

MMDTA42

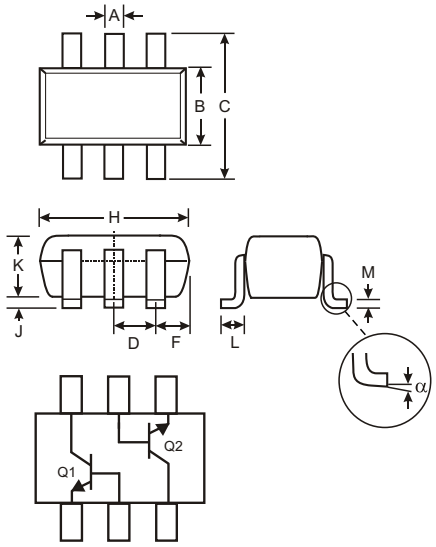
DUAL NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Ideal for Medium Power Amplification and Switching
- **Lead Free/RoHS Compliant (Note 3)**
- **"Green" Device, Note 4 and 5**

Mechanical Data

- Case: SOT-26
- Case Material: Molded Plastic, "Green" Molding Compound, Note 5. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Copper leadframe).
- Marking (See Page 2): K3M
- Ordering & Date Code Information: See Page 2
- Weight: 0.008 grams (approximate)



SOT-26			
Dim	**Min**	**Max**	**Typ**
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D			0.95
F			0.55
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
	0	8	
All Dimensions in mm			

Maximum Ratings @ T_A = 25 C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	300	V
Collector-Emitter Voltage	V_{CEO}	300	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current (Note 1) (Note 2)	I_C	500	mA
Power Dissipation (Note 1)	P_d	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	R_{JA}	417	C/W
Operating and Storage and 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. When operated under collector-emitter saturation conditions within the safe operating area defined by the thermal resistance rating (R_{JA}), power dissipation rating (P_d) and power derating curve (figure 1).
3. No purposefully added lead.
4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com./products/lead_free/index.php.
5. Product manufactured with Date Code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0609 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 6)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	300		V	I_C = 100 A, I_E = 0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	300		V	I_C = 1.0mA, I_B = 0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6.0		V	I_E = 100 A, I_C = 0
Collector Cutoff Current	I_{CBO}		100	nA	V_{CB} = 200V, I_E = 0
Collector Cutoff Current	I_{EBO}		100	nA	V_{CE} = 6.0V, I_C = 0
ON CHARACTERISTICS (Note 6)					
DC Current Gain	h_{FE}	25 40 40			I_C = 1.0mA, V_{CE} = 10V I_C = 10mA, V_{CE} = 10V I_C = 30mA, V_{CE} = 10V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		0.5	V	I_C = 20mA, I_B = 2.0mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$		0.9	V	I_C = 20mA, I_B = 2.0mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{cb}		3.0	pF	V_{CB} = 20V, f = 1.0MHz, I_E = 0
Current Gain-Bandwidth Product	f_T	50		MHz	V_{CE} = 20V, I_C = 10mA, f = 100MHz

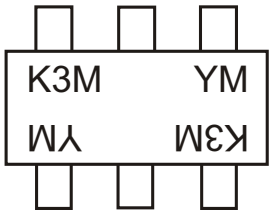
Notes: 6. Short duration test pulse used to minimize self-heating effect.

Ordering Information (Note 5 & 7)

Device	Packaging	Shipping
MMDTA42-7-F	SOT-26	3000/Tape & Reel

Notes: 5. Product manufactured with Date Code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
7. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



K3M = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: P = 2003
M = Month ex: 9 = September

Date Code Key

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	R	S	T	U	V	W	X	Y	Z

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

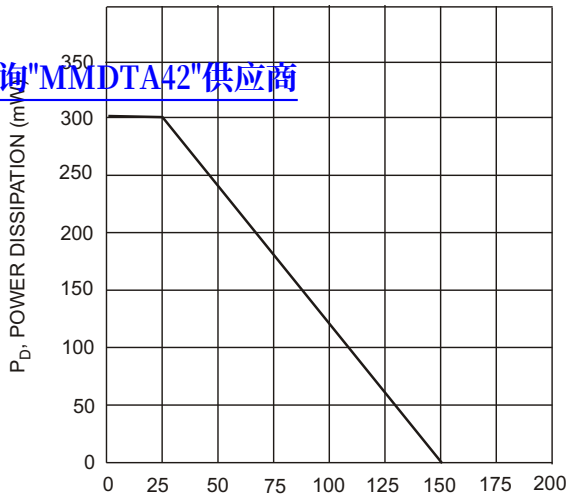


Fig. 1, Max Power Dissipation vs Ambient Temperature

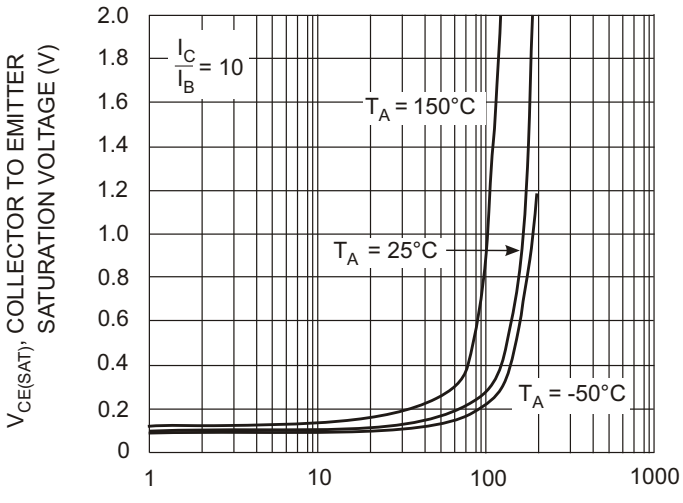


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

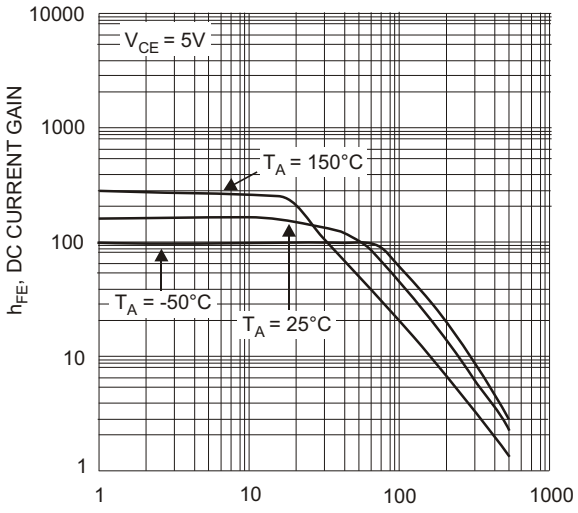


Fig. 3, DC Current Gain vs Collector Current

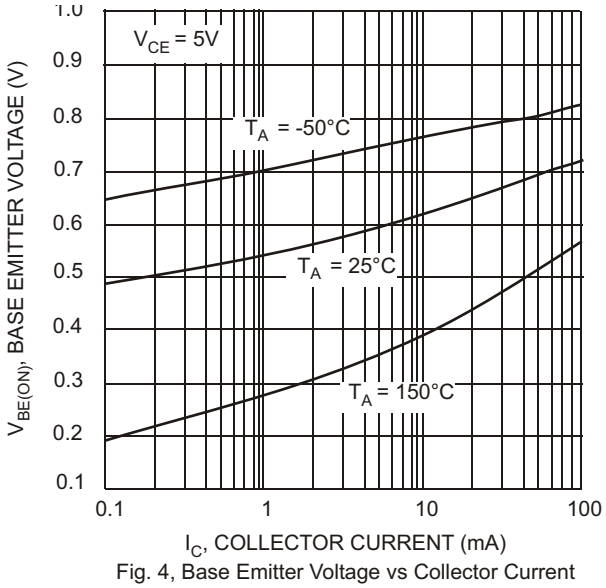


Fig. 4, Base Emitter Voltage vs Collector Current

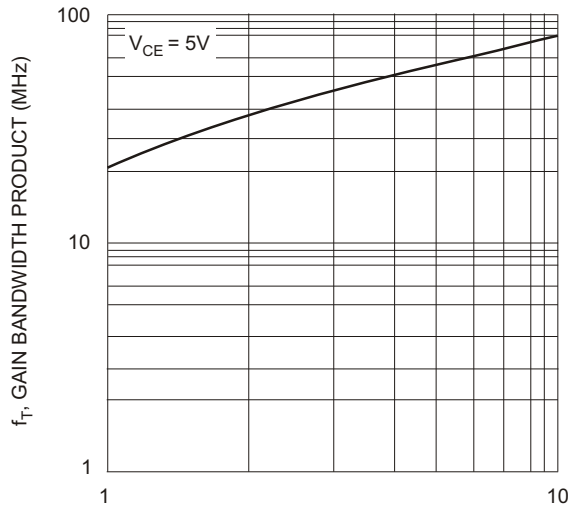


Fig. 5, Gain Bandwidth Product vs Collector Current