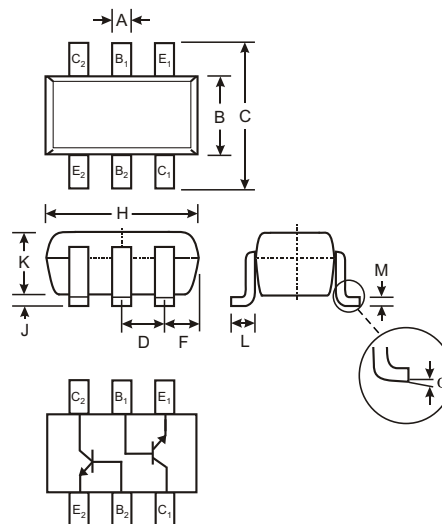


Features

- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching
- Ultra-Small Surface Mount Package
- Lead Free/RoHS Compliant (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability**

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 (See Page 2): K2X
- Ordering & Date Code Information: See Page 2
- Weight: 0.006 grams (approximate)



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
	0	8
All Dimensions in mm		

Maximum Ratings @ $T_A = 25\text{ C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	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, 2)	P_d	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	R_{JA}	625	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. Maximum combined dissipation.
 3. No purposefully added lead.

Electrical Characteristics @ T_A = 25 C unless otherwise specified

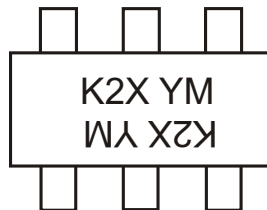
Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)					
Collector-Base Breakdown Voltage	V _{(BR)CBO}	60		V	I _C = 100 A, I _E = 0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	40		V	I _C = 1.0mA, I _B = 0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	6.0		V	I _E = 100 A, I _C = 0
Collector Cutoff Current	I _{CEX}		100	nA	V _{CE} = 35V, V _{EB(OFF)} = 0.4V
Base Cutoff Current	I _{BL}		100	nA	V _{CE} = 35V, V _{EB(OFF)} = 0.4V
ON CHARACTERISTICS (Note 4)					
DC Current Gain	h _{FE}	20 40 80 100 40	300		I _C = 100μA, V _{CE} = 1.0V I _C = 1.0mA, V _{CE} = 1.0V I _C = 10mA, V _{CE} = 1.0V I _C = 150mA, V _{CE} = 1.0V I _C = 500mA, V _{CE} = 2.0V
Collector-Emitter Saturation Voltage	V _{CE(SAT)}		0.40 0.75	V	I _C = 150mA, I _B = 15mA I _C = 500mA, I _B = 50mA
Base-Emitter Saturation Voltage	V _{BE(SAT)}	0.75	0.95 1.2	V	I _C = 150mA, I _B = 15mA I _C = 500mA, I _B = 50mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C _{cb}		6.5	pF	V _{CB} = 5.0V, f = 1.0MHz, I _E = 0
Input Capacitance	C _{eb}		30	pF	V _{EB} = 0.5V, f = 1.0MHz, I _C = 0
Input Impedance	h _{ie}	1.0	15	k	V _{CE} = 10V, I _C = 1.0mA, f = 1.0kHz
Voltage Feedback Ratio	h _{re}	0.1	8.0	x 10 ⁻⁴	
Small Signal Current Gain	h _{fe}	40	500		
Output Admittance	h _{oe}	1.0	30	S	
Current Gain-Bandwidth Product	f _T	250		MHz	V _{CE} = 10V, I _C = 20mA, f = 100MHz
SWITCHING CHARACTERISTICS					
Delay Time	t _d		15	ns	V _{CC} = 30V, I _C = 150mA, V _{BE(off)} = 2.0V, I _{B1} = 15mA
Rise Time	t _r		20	ns	
Storage Time	t _s		225	ns	V _{CC} = 30V, I _C = 150mA, I _{B1} = I _{B2} = 15mA
Fall Time	t _f		30	ns	

Ordering Information (Note 5)

Device	Packaging	Shipping
MMDT4401-7-F	SOT-363	3000/Tape & Reel

- Notes: 4. Short duration pulse test used to minimize self-heating effect.
5. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

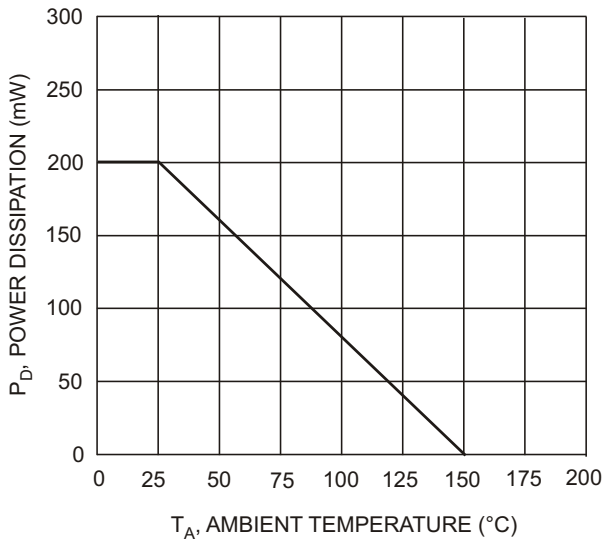
Marking Information



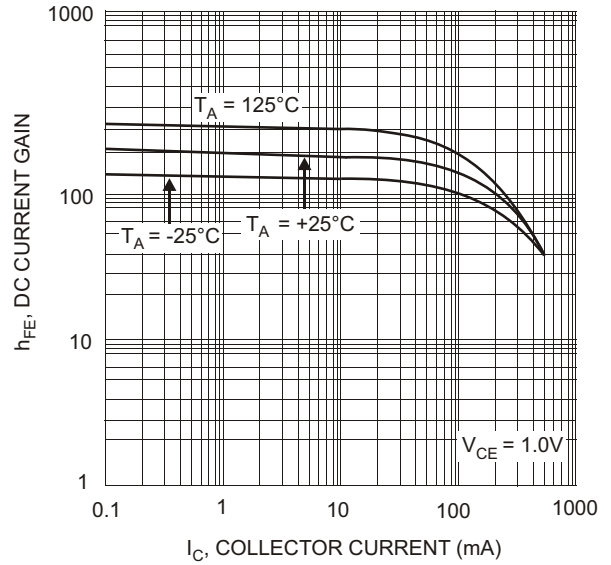
K2X = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: N = 2002
M = Month ex: 9 = September

Date Code Key

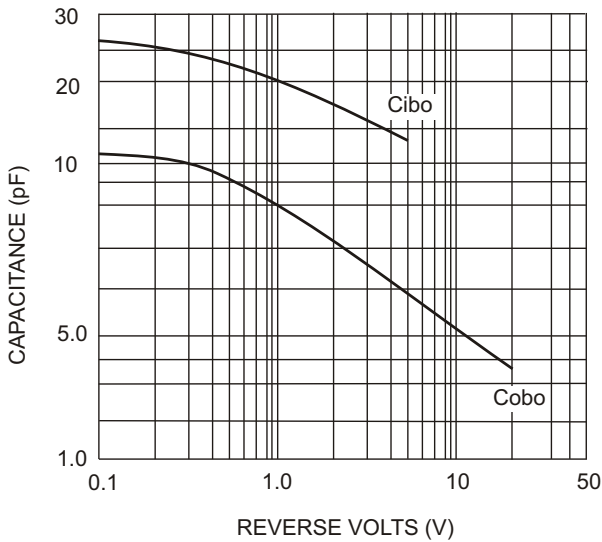
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Code	J	K	L	M	N	P	R	S	T	U	V	W
Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D



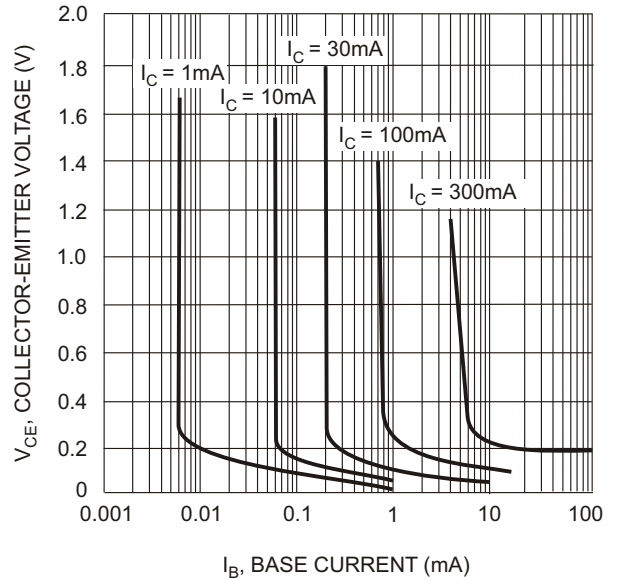
T_A , AMBIENT TEMPERATURE ($^{\circ}\text{C}$)
Fig. 1 Max Power Dissipation vs Ambient Temperature



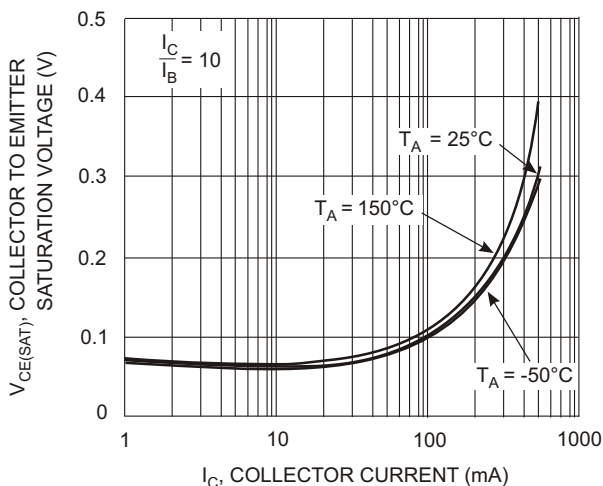
I_C , COLLECTOR CURRENT (mA)
Fig. 2 Typical DC Current Gain vs Collector Current



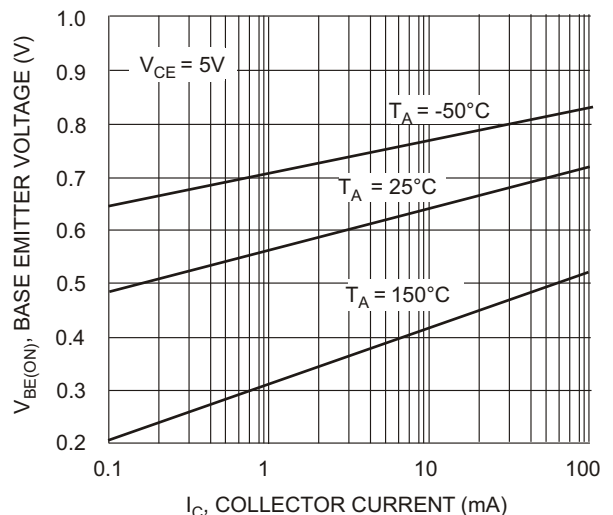
REVERSE VOLTS (V)
Fig. 3 Typical Capacitance



I_B , BASE CURRENT (mA)
Fig. 4 Typical Collector Saturation Region



I_C , COLLECTOR CURRENT (mA)
Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current



I_C , COLLECTOR CURRENT (mA)
Fig. 6 Base Emitter Voltage vs. Collector Current

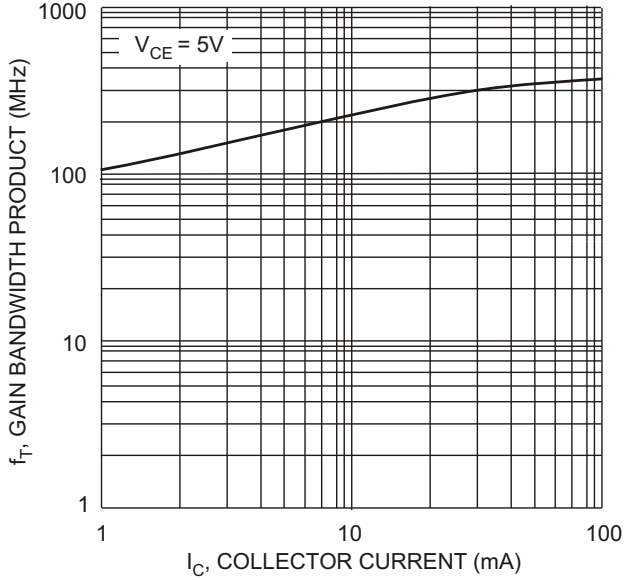


Fig. 7 Gain Bandwidth Product vs. Collector Current

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