



MMBT6427

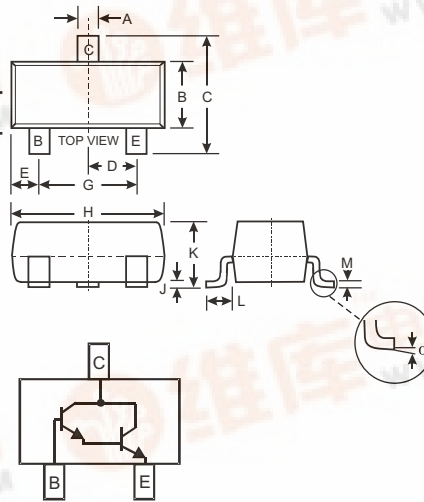
NPN SURFACE MOUNT DARLINGTON TRANSISTOR

Features

Epitaxial Planar Die Construction
Ideal for Low Power Amplification and Switching
High Current Gain
Lead Free/RoHS Compliant (Note 1)

Mechanical Data

Case: SOT-23
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 3): K1D
Ordering & Date Code Information: See Page 3
Weight: 0.008 grams (approximate)



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
	0	8
All Dimensions in mm		

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	40	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	12	V
Collector Current - Continuous	I_C	500	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 2) @ $T_A = 25^\circ\text{C}$	P_d	300	mW
Thermal Resistance, Junction to Ambient (Note 2) @ $T_A = 25^\circ\text{C}$	R_{JA}	417	C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	C

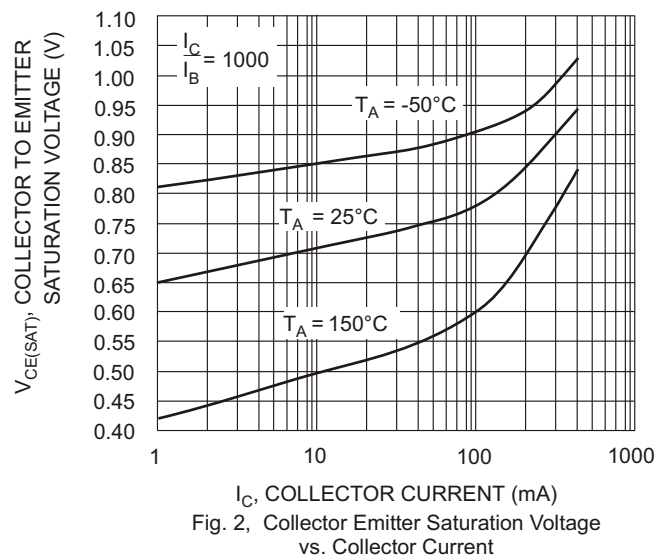
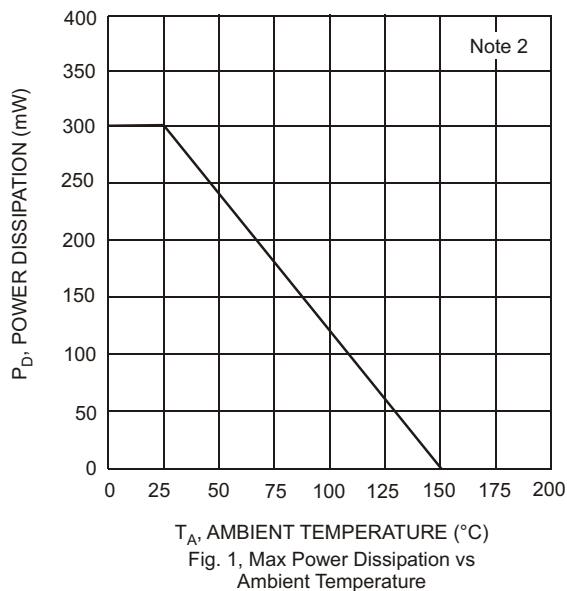
- Note:
1. No purposefully added lead.
 2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.



Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	40		V	$I_C = 100\text{ A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40		V	$I_C = 10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	12		V	$I_E = 10\text{ A}, I_C = 0$
Collector Cutoff Current	I_{CBO}		50	nA	$V_{CB} = 30\text{V}, I_E = 0$
Collector Cutoff Current	I_{CEO}		1.0	A	$V_{CE} = 25\text{V}, I_B = 0$
Emitter Cutoff Current	I_{EBO}		50	nA	$V_{EB} = 10\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 3)					
DC Current Gain	h_{FE}	10,000 20,000 14,000	100,000 200,000 140,000		$I_C = 10\text{mA}, V_{CE} = 5.0\text{V}$ $I_C = 100\text{mA}, V_{CE} = 5.0\text{V}$ $I_C = 500\text{mA}, V_{CE} = 5.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		1.2 1.5	V	$I_C = 50\text{mA}, I_B = 0.5\text{mA}$ $I_C = 500\text{mA}, I_B = 0.5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$		2.0	V	$I_C = 500\text{mA}, I_B = 0.5\text{mA}$
Base-Emitter On Voltage	$V_{BE(ON)}$		1.75	V	$I_C = 50\text{mA}, V_{CE} = 5.0\text{V}$
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{obo}	8.0 Typical		pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}, I_E = 0$
Input Capacitance	C_{ibo}	15 Typical		pF	$V_{EB} = 0.5\text{V}, f = 1.0\text{MHz}, I_C = 0$

Note: 3. Short duration pulse test used to minimize self-heating effect.



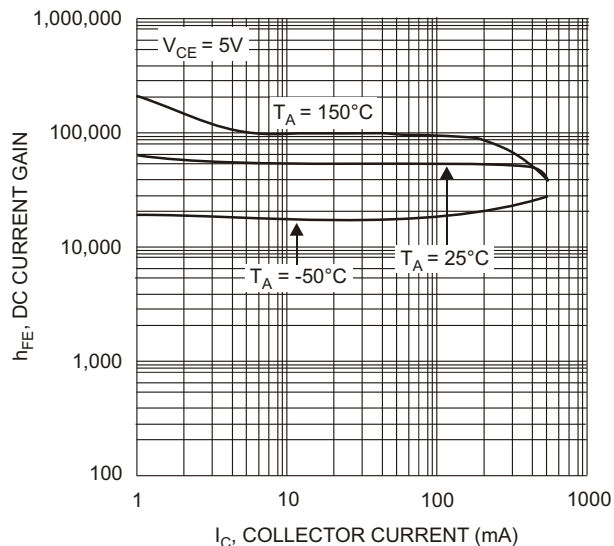


Fig. 3, DC Current Gain vs Collector Current

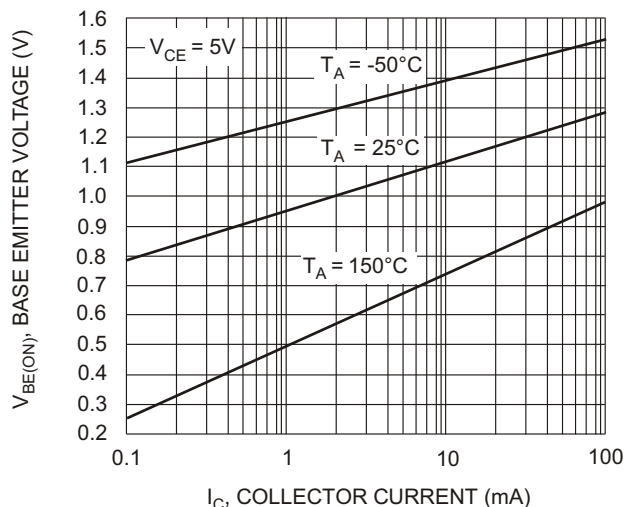


Fig. 4, Base Emitter Voltage vs. Collector Current

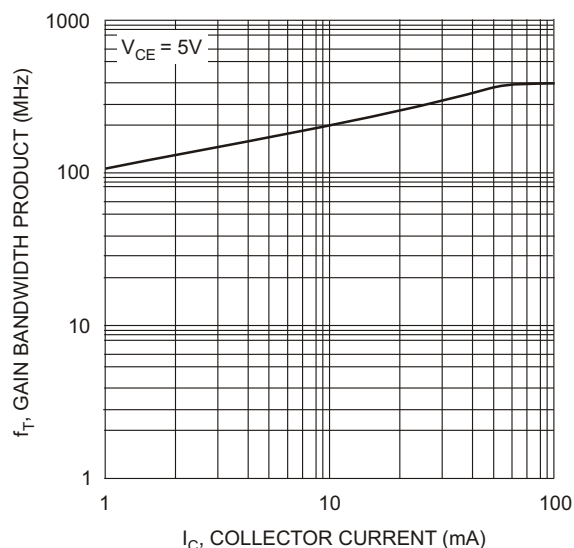


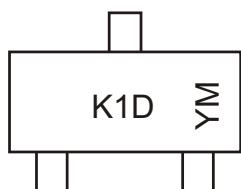
Fig. 5, Gain Bandwidth Product vs Collector Current

Ordering Information (Note 4)

Device	Packaging	Shipping
MMBT6427-7-F	SOT-23	3000/Tape & Reel

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



K1D = 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	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z

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



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