



# <u>MMBT6427</u>

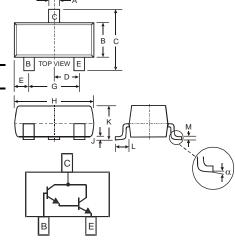
NPN SURFACE MOUNT DARLINGTON TRANSISTOR

#### **Features**

- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching
- High Current Gain
- Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 1 and 4)

# **Mechanical Data**

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- 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					
Α	0.37	0.51					
В	1.20	1.40					
С	2.30	2.50					
D	0.89	1.03					
E	0.45	0.60					
G	1.78	2.05					
Н	2.80	3.00					
J	0.013	0.10					
K	0.903	1.10					
L	0.45	0.61					
М	0.085	0.180					
α	0°	8°					
All Dir	nensions	in mm					

<b>Maximum Ratings</b> $@T_A = 25^{\circ}C$ unless otherwise specified	d
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Characteristic	Symbol	Value	Unit		
Collector-Base Voltage	V <sub>CBO</sub>	40	V		
Collector-Emitter Voltage	V <sub>CEO</sub>	40	V		
Emitter-Base Voltage	V <sub>EBO</sub>	12	V		
Collector Current - Continuous	Ι <sub>C</sub>	500	mA		

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 2) @ T <sub>A</sub> = 25°C	PD	300	mW
Thermal Resistance, Junction to Ambient (Note 2) @ $T_A = 25^{\circ}C$	$R_{ ext{ heta}JA}$	417	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)					
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	40	_	V	$I_{C} = 100 \mu A, I_{E} = 0$
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	40	_	V	$I_{\rm C} = 10 {\rm mA}, I_{\rm B} = 0$
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	12	_	V	$I_{E} = 10 \mu A, I_{C} = 0$
Collector Cutoff Current	ICBO	_	50	nA	$V_{CB} = 30V, I_E = 0$
Collector Cutoff Current	ICEO	_	1.0	μA	$V_{CE} = 25V, I_B = 0$
Emitter Cutoff Current	I <sub>EBO</sub>	_	50	nA	$V_{EB} = 10V, I_{C} = 0$
ON CHARACTERISTICS (Note 3)					
		10,000	100,000		$I_{C} = 10 \text{mA}, V_{CE} = 5.0 \text{V}$
DC Current Gain	h <sub>FE</sub>	20,000	200,000		$I_{C} = 100 \text{mA}, V_{CE} = 5.0 \text{V}$
		14,000	140,000		$I_{C} = 500 \text{mA}, V_{CE} = 5.0 \text{V}$
Collector-Emitter Saturation Voltage	Manual 1		1.2	V	$I_{C} = 50 \text{mA}, I_{B} = 0.5 \text{mA}$
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	_	1.5	v	I <sub>C</sub> = 500mA, I <sub>B</sub> = 0.5mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	_	2.0	V	I <sub>C</sub> = 500mA, I <sub>B</sub> = 0.5mA
Base-Emitter On Voltage	V <sub>BE(ON)</sub>	_	1.75	V	I <sub>C</sub> = 50mA, V <sub>CE</sub> =5.0V
SMALL SIGNAL CHARACTERISTICS					•
Output Capacitance	Cobo	8.0 Typical		pF	$V_{CB} = 10V, f = 1.0MHz, I_E = 0$
Input Capacitance	Cibo	15 T	ypical	pF	V <sub>EB</sub> = 0.5V, f = 1.0MHz, I <sub>C</sub> = 0

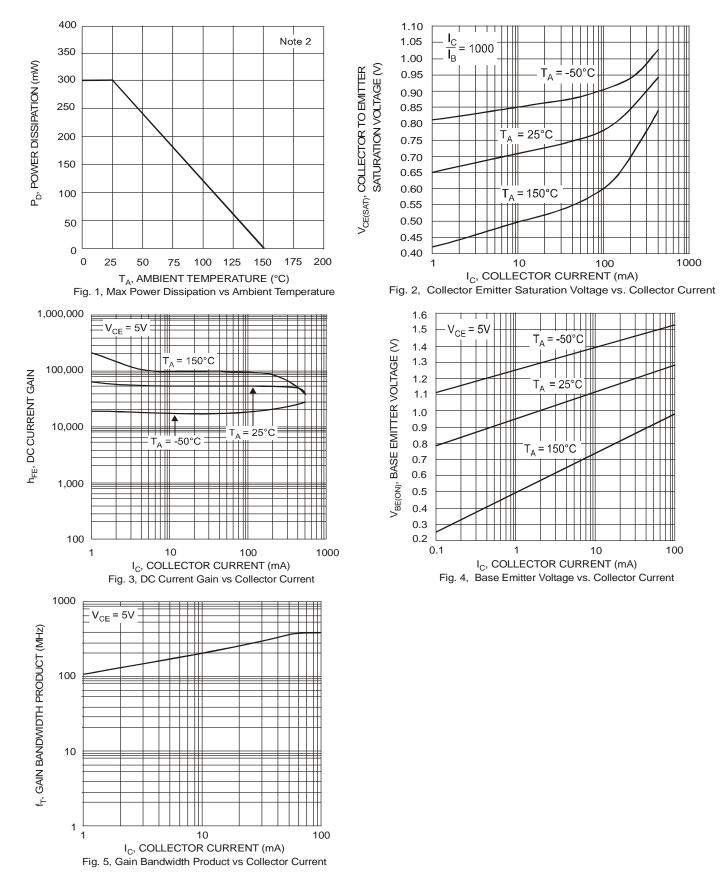
Notes: 1. No purposefully added lead. Halogen and Antimony Free.

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.

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

 Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.





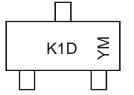


# Ordering Information (Note 5)

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

Notes: 5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

## **Marking Information**



 $\begin{array}{l} \mathsf{K1D} = \mathsf{Product Type Marking Code} \\ \mathsf{YM} = \mathsf{Date Code Marking} \\ \mathsf{Y} = \mathsf{Year ex: N} = 2002 \\ \mathsf{M} = \mathsf{Month ex: 9} = \mathsf{September} \end{array}$ 

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 I	Mar	Apr	May	Ju	ın	Jul	Aug	Sep	Oc	t	Nov	Dec
Code	1	2		3	4	5	6	6	7	8	9	0		Ν	D

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