MMST6427

NPN SURFACE MOUNT DARLINGTON TRANSISTOR

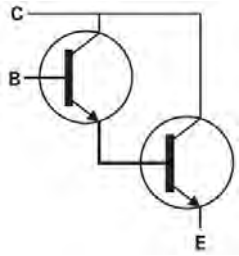
Features

- 40V Darlington Transistor
- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching
- High Current Gain
- Ultra-Small Surface Mount Package
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**

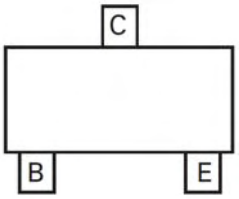
Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Weight: 0.006 grams (approximate)

Top View



Device symbol



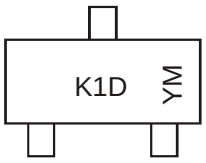
Pin-out Top view

Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
MMST6427-7-F	K1D	7	8	3,000

Notes: 1. No purposefully added lead.
2. Diodes Inc.`s "Green" Policy can be found on our website at http://www.diodes.com
3. For Packaging Details, go to our website at http://www.diodes.com.

Marking Information



K1D= Product Type Marking Code
YM = Date Code Marking
Y = Year ex: X = 2010
M = Month ex: 9 = September

Date Code Key

Year	2010	2011	2012	2013	2014	2015
Code	X	Y	Z	A	B	C

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}	40	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	12	V
Collector Current - Continuous (Note 4)	I_C	500	mA
Power Dissipation (Note 4)	P_d	200	mW
Thermal Resistance, Junction to Ambient (Note 4)	$R_{\theta JA}$	625	°C/W
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	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)					
Collector-Base Breakdown Voltage	BV_{CBO}	40	—	V	I_C = 100μA, I_E = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	40	—	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	12	—	V	I_E = 10μA, I_C = 0
Collector Cutoff Current	I_{CBO}	—	50	nA	V_{CB} = 30V, I_E = 0
Collector Cutoff Current	I_{CEO}	—	1.0	μA	V_{CE} = 25V, I_B = 0
Emitter Cutoff Current	I_{EBO}	—	50	nA	V_{EB} = 10V, I_C = 0
ON CHARACTERISTICS (Note 5)					
DC Current Gain	h_{FE}	10,000 20,000 14,000	100,000 200,000 140,000	—	I_C = 10mA, V_{CE} = 5.0V I_C = 100mA, V_{CE} = 5.0V I_C = 500mA, V_{CE} = 5.0V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	1.2 1.5	V	I_C = 50mA, I_B = 0.5mA I_C = 500mA, I_B = 0.5mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	2.0	V	I_C = 500mA, I_B = 0.5mA
Base-Emitter On Voltage	$V_{BE(on)}$	—	1.75	V	I_C = 50mA, V_{CE} =5.0V
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{obo}	8.0 Typical		pF	V_{CB} = 10V, f = 1.0MHz, I_E = 0
Input Capacitance	C_{ibo}	15 Typical		pF	V_{EB} = 0.5V, f = 1.0MHz, I_C = 0

Notes: 4. Device mounted on 25mm x 22 mm x 1.6mm FR4 PCB, 1oz copper, singled sided
5. Short duration pulse test used to minimize self-heating effect.

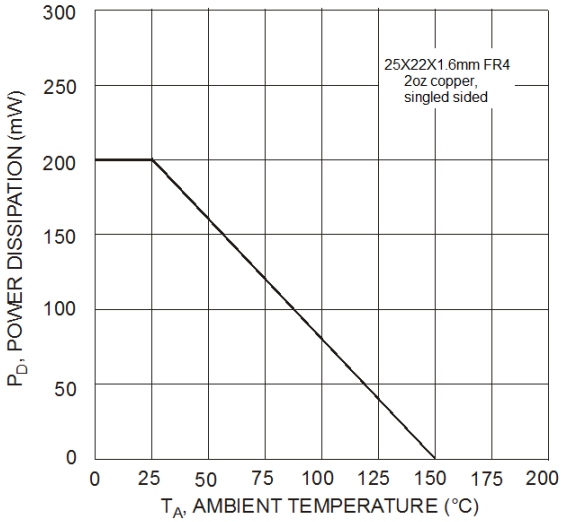


Fig. 1, Max Power Dissipation vs. Ambient Temperature

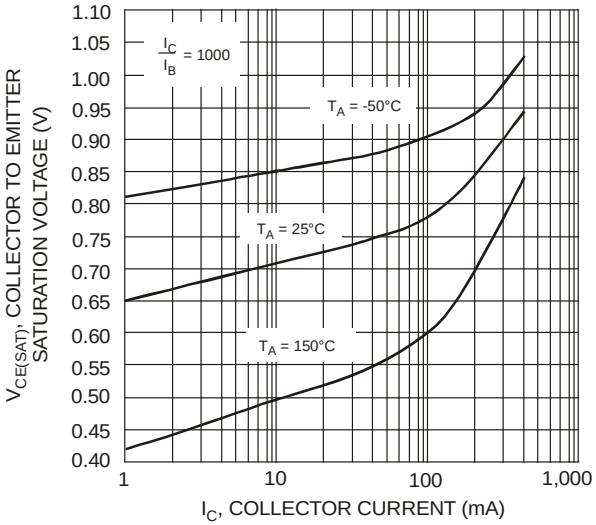


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

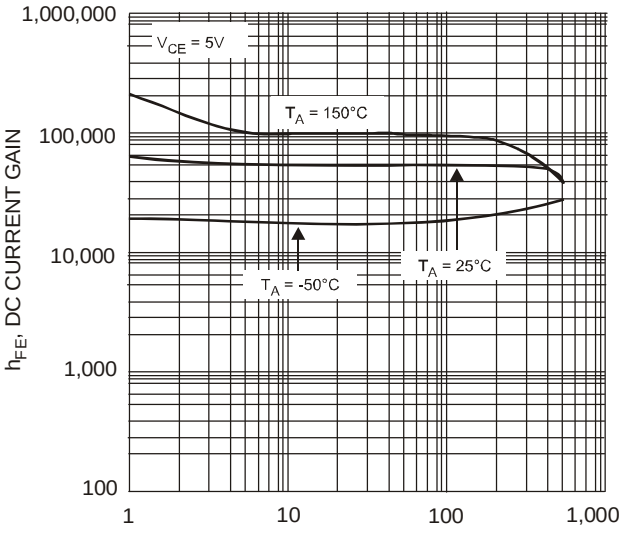


Fig. 3, DC Current Gain vs. Collector Current

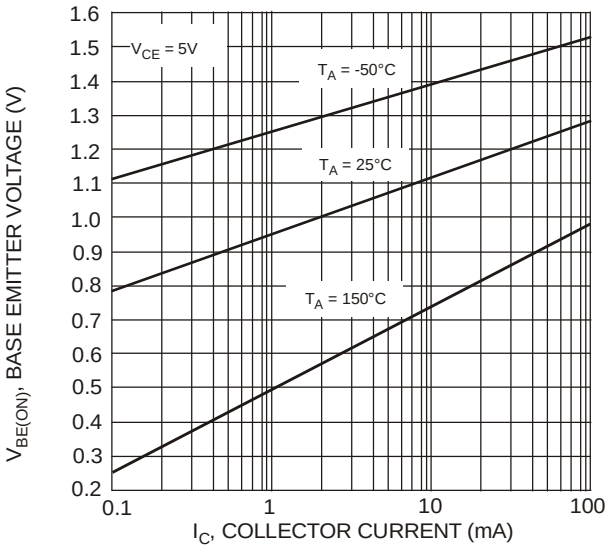


Fig. 4, Base Emitter Voltage vs. Collector Current

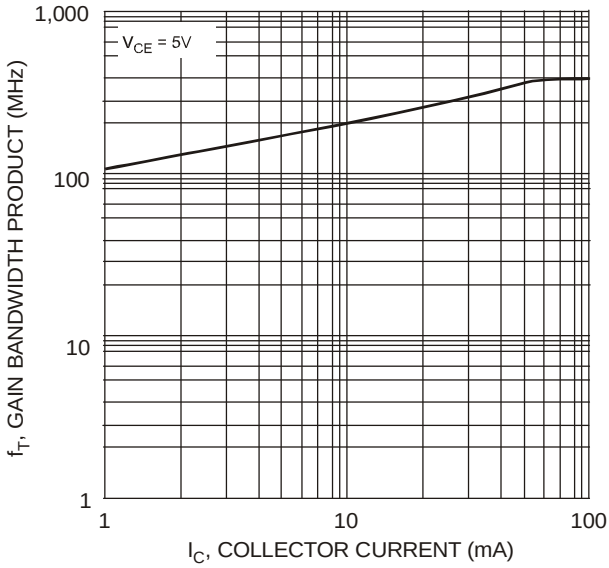
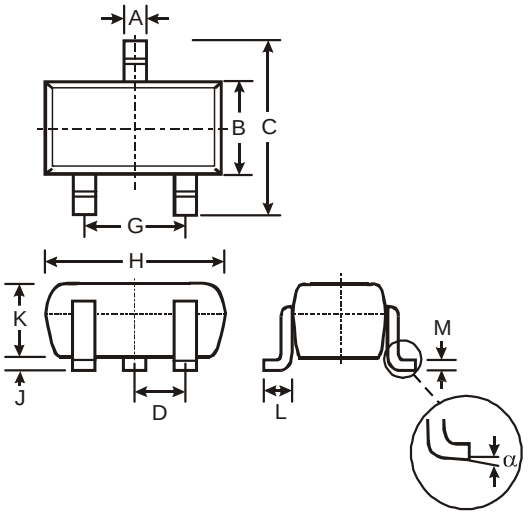


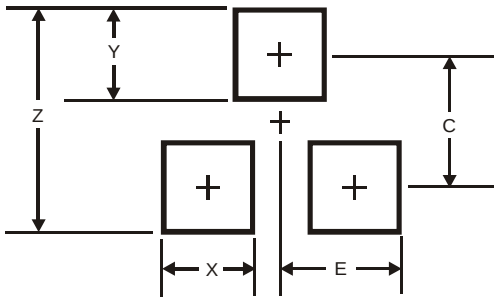
Fig. 5, Gain Bandwidth Product vs. Collector Current

Package Outline Dimensions



SOT323			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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