





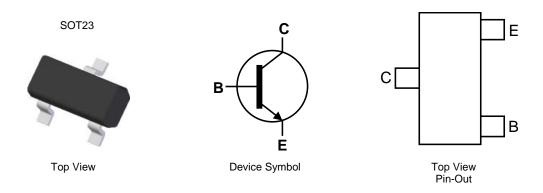
60V NPN MEDIUM POWER TRANSISTOR IN SOT23

Features

- BV_{CEO} > 60V
- I_C = 1A Continuous Collector Current
- I_{CM} = 2A Peak Pulse Current
- 500mW Power Dissipation
- Complementary PNP Type: FMMT551
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads. Solderable per MIL-STD-202, Method 208 <a>®
- Weight 0.008 grams (approximate)



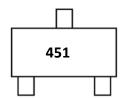
Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FMMT451TA	AEC-Q101	451	7	8	3,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



451 = Product Type Marking Code





FMMT451

Absolute Maximum Ratings (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	Ic	1	Α
Peak Pulse Current	I _{CM}	2	Α
Base Current	l _Β	200	mA

Thermal Characteristics (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{ heta JA}$	250	°C/W
Thermal Resistance, Junction to Lead (Note 6)	$R_{ heta JL}$	197	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	С

Notes:

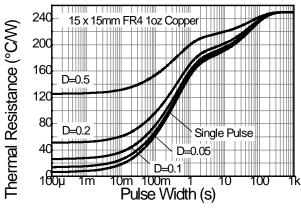
^{5.} For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.

^{6.} Thermal resistance from junction to solder-point (at the end of the collector lead).

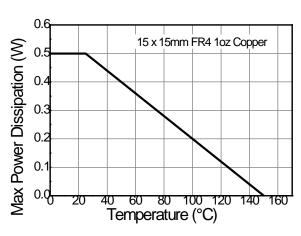
^{7.} Refer to JEDEC specification JESD22-A114 and JESD22-A115.



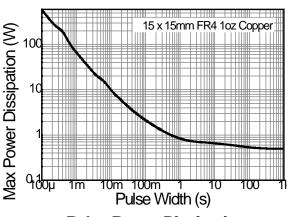
Thermal Characteristics and Derating Information



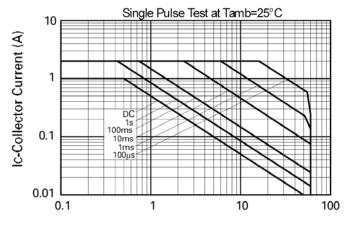
Transient Thermal Impedance



Derating Curve



Pulse Power Dissipation



VCE - Collector Emitter Voltage (V)

Safe Operating Area





FMMT451

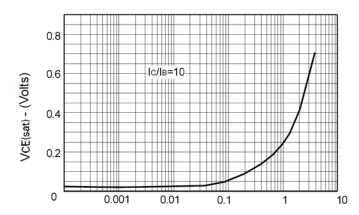
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	80	_	_	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV _{CEO}	60	_	_	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	_	_	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	_	_	100	nA	V _{CB} = 60V
Emitter Cutoff Current	I _{EBO}	_	_	100	nA	V _{EB} = 4V
Static Forward Current Transfer Ratio (Note 8)	h	50	_	150		I _C = 150mA, V _{CE} = 10V
Static Forward Current Transfer Ratio (Note 6)	h _{FE}	10	_	_		$I_{C} = 1A, V_{CE} = 10V$
Collector-Emitter Saturation Voltage (Note 8)	V _{CE(sat)}	_	_	0.35	V	I _C = 150mA, I _B = 15mA
Base-Emitter Saturation Voltage(Note 8)	V _{BE(sat)}	_	_	1.1	V	I _C = 150mA, I _B = 15mA
Output Capacitance	C_obo	_	_	15	pF	V _{CB} = 10V. f = 1MHz
Transition Frequency	f _T	150	_	_	MHz	$V_{CE} = 10V, I_{C} = 50mA,$ f = 100MHz

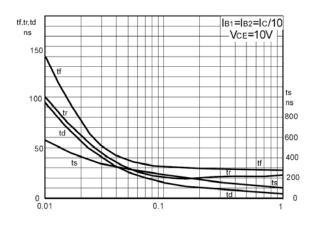
Note: 8. Measured under pulsed conditions. Pulse width \leq 300 μ s. Duty cycle \leq 2%.



Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



Ic - Collector Current (Amps)

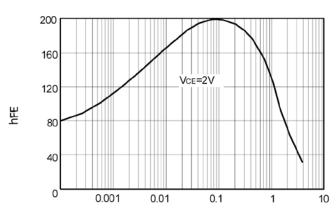


Switching time

VBE(sat) - (Volts)

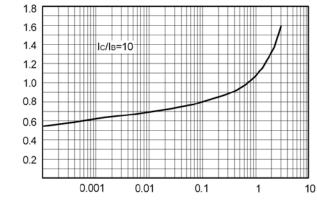
Ic - Collector Current (Amps)

VCE(sat) v IC



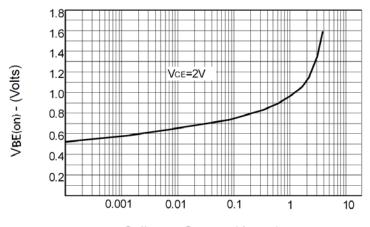
Ic - Collector Current (Amps)

Switching Speeds



Ic - Collector Current (Amps)

hFE v IC



Ic - Collector Current (Amps)

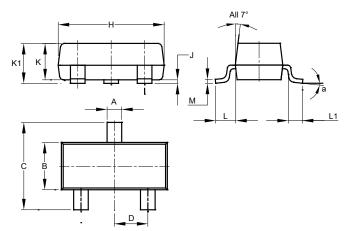
VBE(on) v IC



FMMT451

Package Outline Dimensions

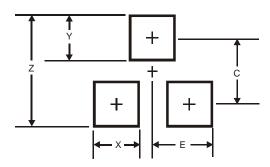
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT23					
Dim	Min	Max	Тур		
Α	0.37	0.51	0.40		
В	1.20	1.40	1.30		
С	2.30	2.50	2.40		
D	0.89	1.03	0.915		
F	0.45	0.60	0.535		
G	1.78	2.05	1.83		
Н	2.80	3.00	2.90		
J	0.013	0.10	0.05		
K	0.890	1.00	0.975		
K1	0.903	1.10	1.025		
L	0.45 0.61 0.		0.55		
L1	0.25	0.55	0.40		
М	0.085	0.150	0.110		
а	8°				
All Dimensions in mm					

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)		
Z	2.9		
X	0.8		
Υ	0.9		
С	2.0		
E	1.35		





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