



FMMT458

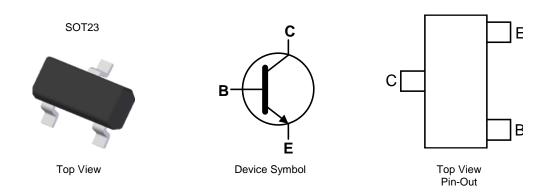
400V NPN HIGH VOLTAGE TRANSISTOR IN SOT23

Features

- BV_{CEO} > 400V
- I_C = 225mA High Continuous Collector Current
- I_{CM} = 1A Peak Pulse Current
- 500mW Power Dissipation
- Excellent h_{FE} Characteristics Up To 100mA
- Complementary PNP Type: FMMT558
- 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
- PPAP Capable (Note 4)

Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 3
- Weight: 0.008 grams (Approximate)



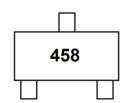
Ordering Information (Notes 4 & 5)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
FMMT458TA	AEC-Q101	458	7	8	3,000
FMMT458QTA	Automotive	458	7	8	3,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/product_compliance_definitions.html.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



458 = Product Type Marking Code



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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	400	V
Collector-Emitter Voltage	V _{CEO}	400	V
Emitter-Base Voltage	V _{EBO}	7	V
Continuous Collector Current	Ic	225	mA
Peak Pulse Current	Ісм	1	Α
Base Current	I _B	200	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P _D	500	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	250	°C/W
Thermal Resistance, Junction to Lead (Note 7)	$R_{ heta JL}$	197	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 8)

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

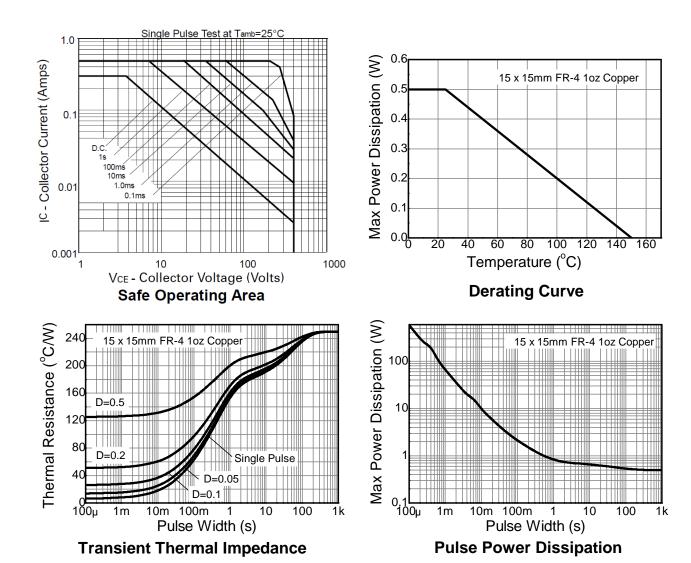
Notes:

- 6. For a device surface mounted on 15mm X 15mm X 1.6mm FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions.
- 7. Thermal resistance from junction to solder-point (at the end of the collector lead).

 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.



Thermal Characteristics and Derating Information





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

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	400	_	_	V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	400	_	_	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	_	_	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	_	_	100	nA	V _{CB} = 320V
Emitter Cutoff Current	I _{EBO}	_	_	100	nA	V _{EB} = 5.6V
Collector Emitter Cutoff Current	I _{CES}	_	_	100	nA	V _{CE} = 320V
Static Forward Current Transfer Ratio (Note 9)	h _{FE}	100 100 15	_	300	_	$I_{C} = 1$ mA, $V_{CE} = 10$ V $I_{C} = 50$ mA, $V_{CE} = 10$ V $I_{C} = 100$ mA, $V_{CE} = 10$ V
Collector-Emitter Saturation Voltage (Note 9)	V _{CE(SAT)}	_	_	200 500	mV mV	$I_C = 20mA, I_B = 2mA$ $I_C = 50mA, I_B = 6mA$
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(ON)}	_	_	0.9	V	I _C = 50mA, V _{CE} = 10V
Base-Emitter Saturation Voltage (Note 9)	V _{BE(SAT)}	_	_	0.9	V	$I_C = 50$ mA, $I_B = 5$ mA
Output Capacitance	Сово	_	_	5	pF	V _{CB} = 20V, f = 1MHz
Transition Frequency	f⊤	50	_	_	MHz	V _{CE} = 20V, I _C = 10mA, f = 20MHz
Turn-On Time	t _{ON}	_	135	_	ns	V _{CE} = 100V, I _C = 50mA
Turn-Off Time	t _{OFF}	_	2260	_	ns	$I_{B1} = 5mA$, $I_{B2} = -10mA$

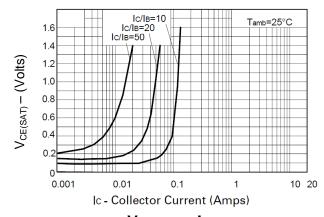
Note: 9. Measured under pulsed conditions. Pulse width $\leq 300 \mu s$. Duty cycle $\leq 2\%$.

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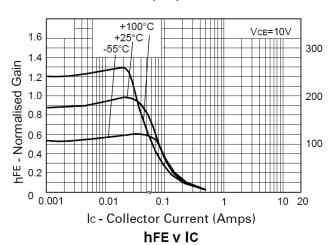
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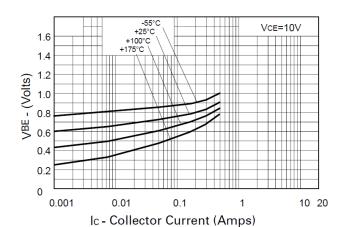


Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

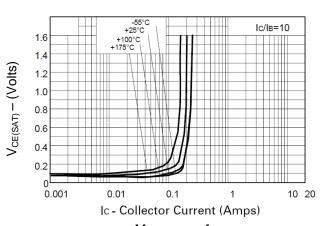




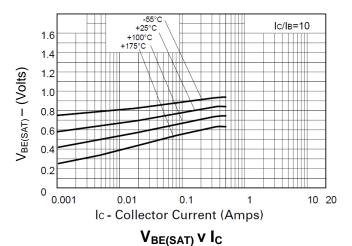




 $V_{BE(ON)} v I_C$



 $V_{CE(SAT)} v I_C$

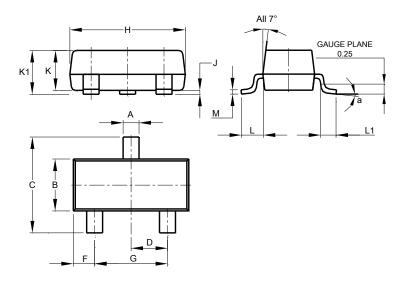




Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT23

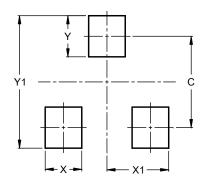


SOT23					
Dim	Min	Max	Тур		
Α	0.37	0.51	0.40		
В	1.20	1.40	1.30		
C	2.30	2.50	2.40		
D	0.89	1.03	0.915		
F	0.45	0.60	0.535		
G	1.78	2.05	1.83		
Н	2.80	3.00	2.90		
J	0.013	0.10	0.05		
K	0.890	1.00	0.975		
K1	0.903	1.10	1.025		
L	0.45	0.61	0.55		
L1	0.25	0.55	0.40		
M	0.085	0.150	0.110		
а	0°	8°			
All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

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT23



Dimensions	Value (in mm)		
С	2.0		
Х	0.8		
X1	1.35		
Υ	0.9		
Y1	2.9		



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