

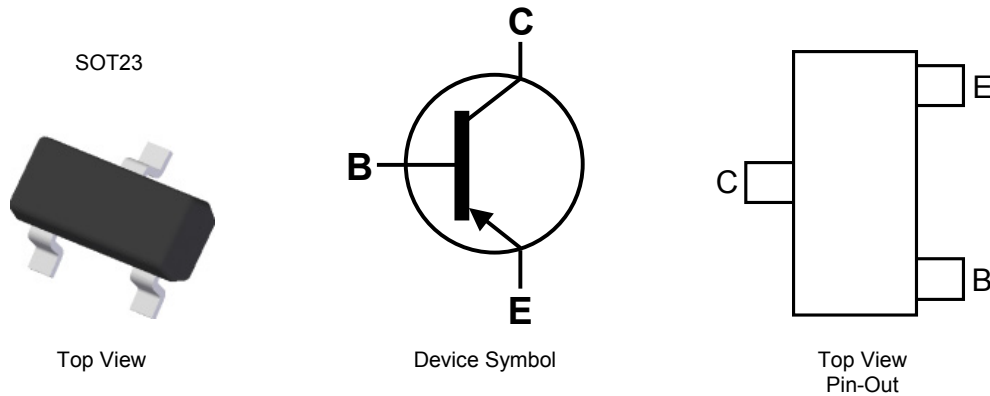
Features

- $BV_{CEO} > -400V$
 - $I_C = -150mA$ high Continuous Collector Current
 - $I_{CM} = -500mA$ Peak Pulse Current
 - 500mW Power Dissipation
 - Excellent h_{FE} Characteristics Up To -100mA
 - Complementary NPN Type: FM558
 - **Totally Lead-Free & Fully RoHS compliant (Note 1 & 2)**
 - **Halogen and Antimony Free. "Green" Device (Note 3)**
- The FM558Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.

<https://www.diodes.com/quality/product-definitions/>

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 (E3)
- Weight: 0.008 grams (Approximate)

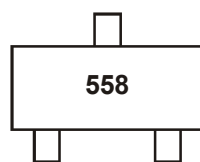


Ordering Information (Notes 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
FM558TA	AEC-Q101	558	7	8	3000
FM558QTA	Automotive	558	7	8	3000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



558 = Product type Marking Code

Absolute 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	I _C	-150	mA
Peak Pulse Current	I _{CM}	-500	mA
Base Current	I _B	-200	mA

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

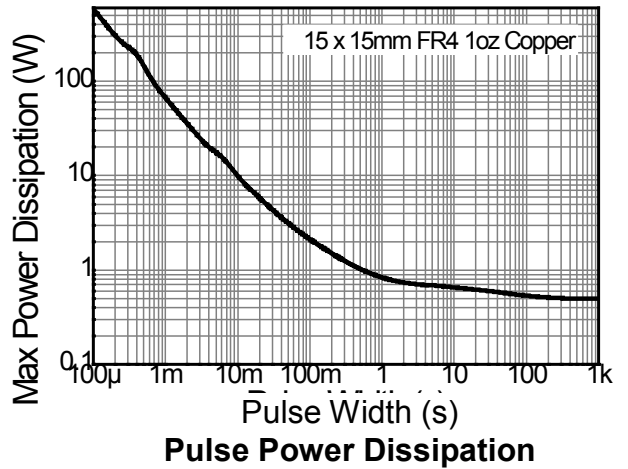
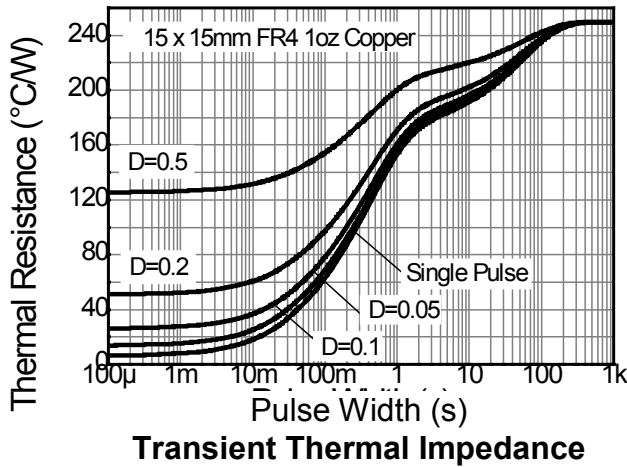
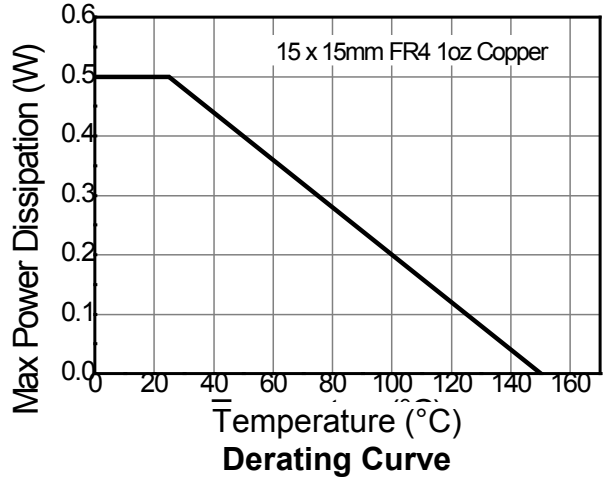
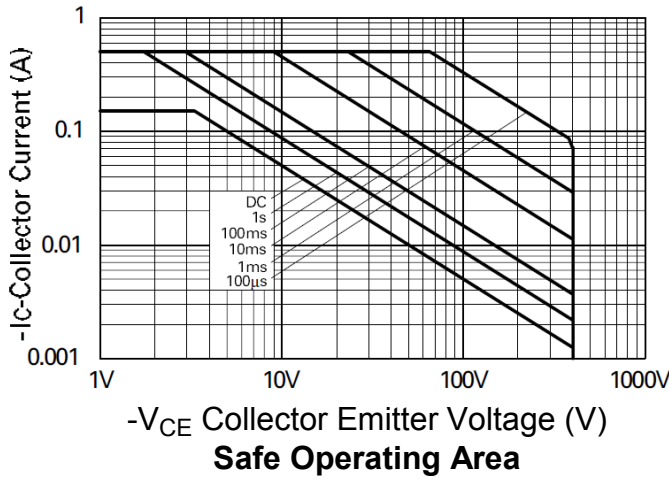
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	250	°C/W
Thermal Resistance, Junction to Lead (Note 6)	R _{θJL}	197	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 8000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

Notes: 5. For a device surface mounted on 15mm X 15mm X 1.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions
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

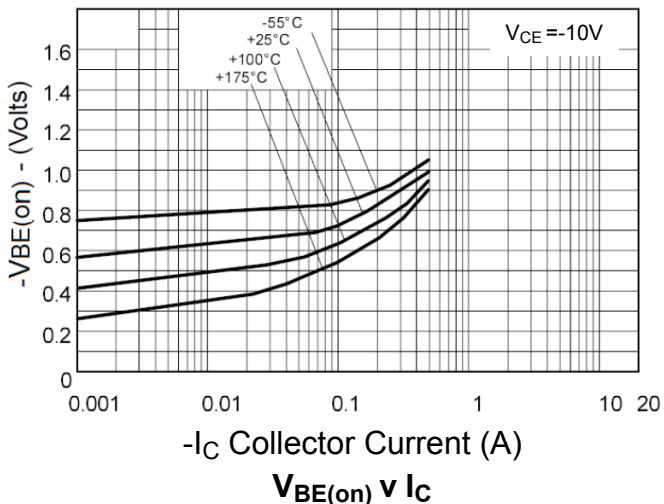
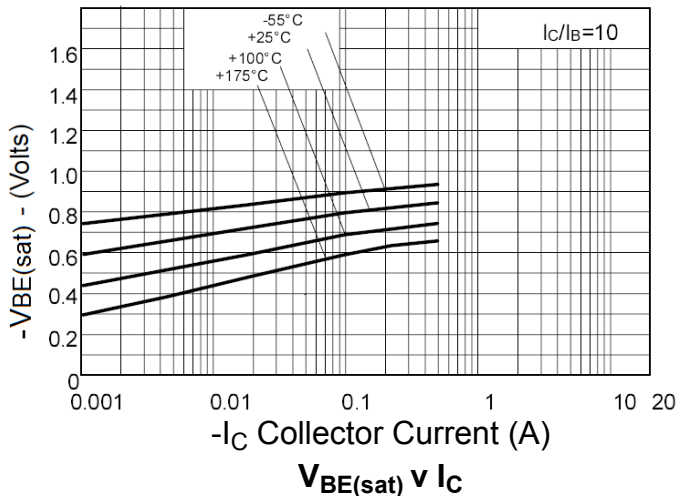
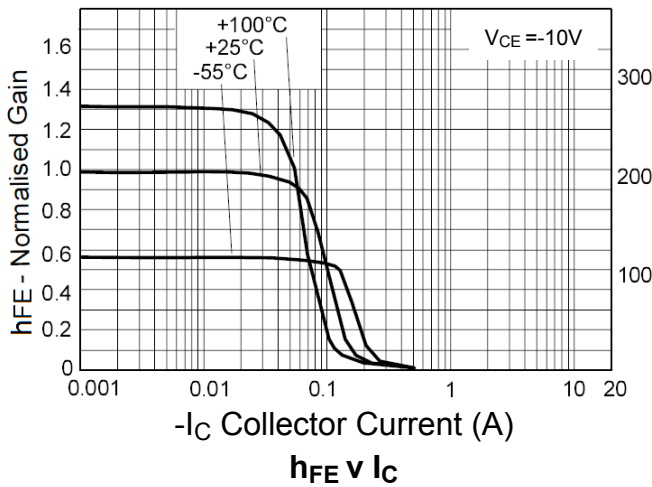
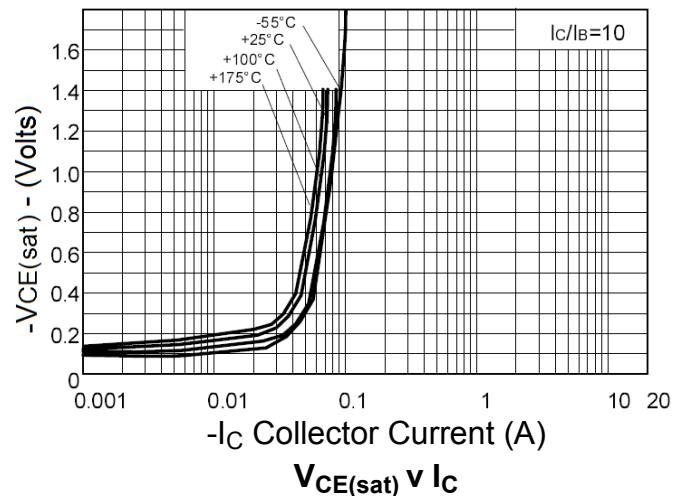
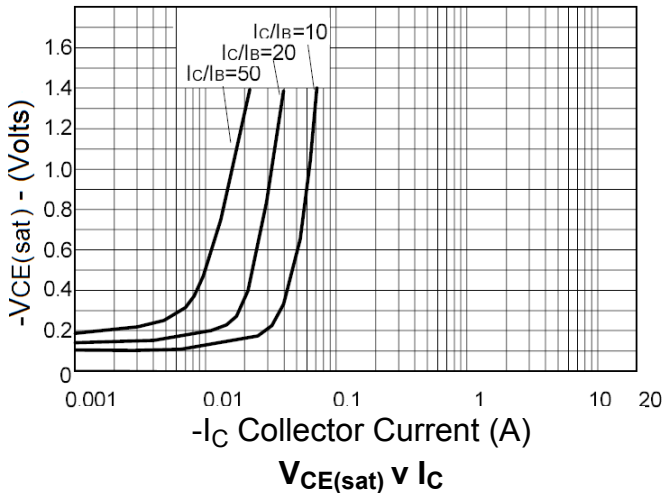


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-400	-	-	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	-400	-	-	V	$I_C = -1\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-	-	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	-	-	-100	nA	$V_{CB} = -320\text{V}$
Emitter Cutoff Current	I_{EBO}	-	-	-100	nA	$V_{EB} = -5.6\text{V}$
Collector Emitter Cutoff Current	I_{CES}	-	-	-100	nA	$V_{CE} = -320\text{V}$
Static Forward Current Transfer Ratio (Note 8)	h_{FE}	100 100 15	- - -	- 300 -	-	$I_C = -1\text{mA}, V_{CE} = -10\text{V}$ $I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $I_C = -100\text{mA}, V_{CE} = -10\text{V}$
Collector-Emitter Saturation Voltage (Note 8)	$V_{CE(sat)}$	-	-	-200 -500	mV mV	$I_C = -20\text{mA}, I_B = -2\text{mA}$ $I_C = -50\text{mA}, I_B = -6\text{mA}$
Base-Emitter Turn-On Voltage (Note 8)	$V_{BE(on)}$	-	-	-0.9	V	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$
Base-Emitter Saturation Voltage (Note 8)	$V_{BE(sat)}$	-	-	-0.9	V	$I_C = -50\text{mA}, I_B = -5\text{mA}$
Output Capacitance	C_{obo}	-	-	5	pF	$V_{CB} = -20\text{V}, f = 1\text{MHz}$
Transition Frequency	f_T	50	-	-	MHz	$V_{CE} = -20\text{V}, I_C = -10\text{mA}, f = 20\text{MHz}$
Turn-On Time	t_{on}	-	95	-	ns	$V_{CE} = -100\text{V}, I_C = -50\text{mA}$
Turn-Off Time	t_{off}	-	1600	-	ns	$I_{B1} = 5\text{mA}, I_{B2} = -10\text{mA}$

Notes: 8. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$

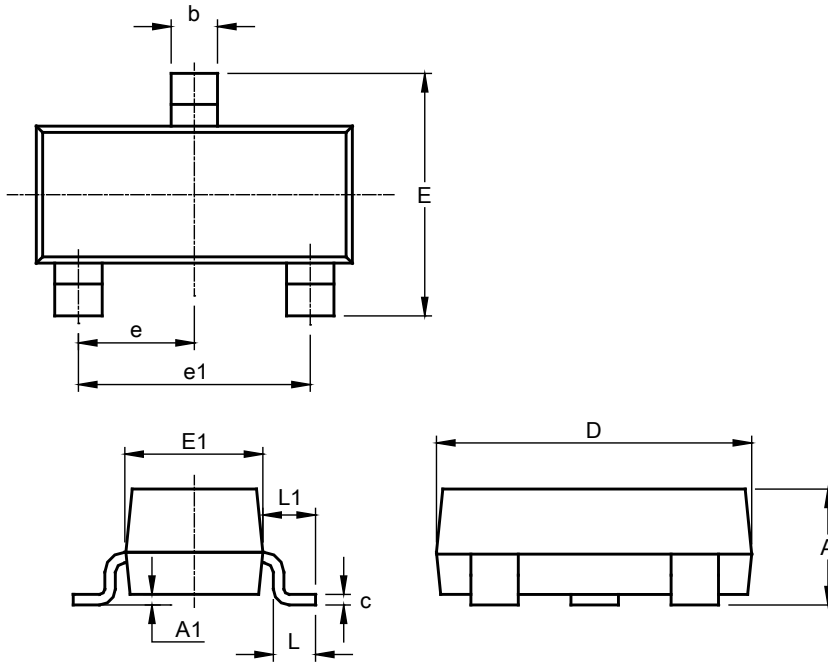
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT23 (Type DN)

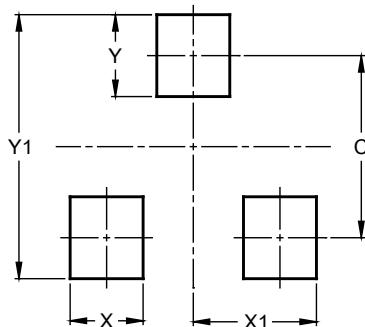


SOT23 Type DN			
Dim	Min	Max	Typ
A	0.89	1.12	1.00
A1	0.01	0.10	0.05
b	0.30	0.51	0.45
c	0.08	0.20	0.10
D	2.80	3.04	3.00
E	2.10	2.64	2.42
E1	1.20	1.40	1.37
e	0.95 REF		
e1	1.90 REF		
L	0.25	0.60	0.30
L1	0.45	0.62	0.54
All Dimensions in mm			

Suggested Pad Layout

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

SOT23 (Type DN)



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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