

30V PNP SILICON PLANAR MEDIUM POWER HIGH PERFORMANCE TRANSISTOR
Features and Benefits

- $BV_{CEO} > -30V$
- $I_C = -1A$ Continuous Collector Current
- Low saturation voltage $V_{CE(sat)} < -350mV$ @ $-1A$
- $R_{SAT} = 250m\Omega$ for a low equivalent on-resistance
- Complementary NPN type: FMMT489
- Low equivalent on-resistance; $R_{CE(sat)} = 250m\Omega$ @ $1A$
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

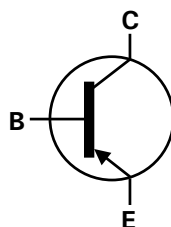
Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound (Note 2). UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Copper Plated Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (approximate)

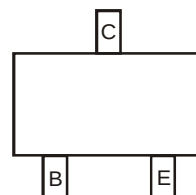
SOT23



Top View



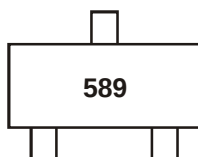
Device Circuit


 Top View
Pin-Out

Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FMMT589TA	589	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


589 = Product Type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-50	V
Collector-Emitter Voltage	V _{CEO}	-30	V
Emitter-Base Voltage	V _{EBO}	-5	V
Continuous Collector Current	I _C	-1	A
Peak Pulse Current	I _{CM}	-2	A
Base Current	I _B	-200	mA

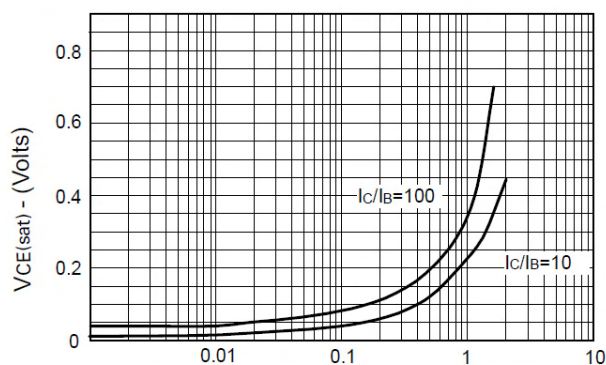
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	500	mW
Linear Derating Factor		4	mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	250	°C/W
Thermal Resistance, Junction to Lead	R _{θJL}	197	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

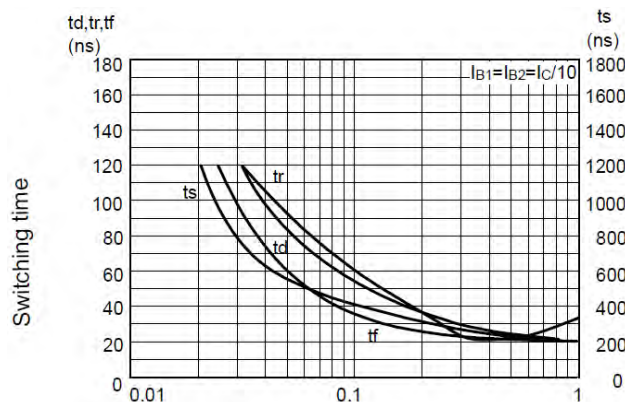
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV _{CBO}	-50	—	—	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 6)	BV _{CEO}	-30	—	—	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-5	—	—	V	I _E = -100μA
Collector Cutoff Current	I _{CBO}	—	—	-100	nA	V _{CB} = -30V
Collector-Emitter Cutoff Current	I _{CES}	—	—	-100	nA	V _{CE} = -30V
Emitter Cutoff Current	I _{EBO}	—	—	-100	nA	V _{EB} = -4V
ON CHARACTERISTICS (Note 6)						
DC Current Gain	h _{FE}	100 100 80 40	— — — —	— 300 — —	—	I _C = -1mA, V _{CE} = -2V I _C = -500mA, V _{CE} = -2V I _C = -1A, V _{CE} = -2V I _C = -2A, V _{CE} = -2V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	— — —	— — —	-0.25 -0.35 -0.65	V	I _C = -0.5A, I _B = -50mA I _C = -1A, I _B = -100mA I _C = -2A, I _B = -200mA
Base-Emitter Saturation Voltage	V _{BE(sat)}	—	—	-1.2	V	I _C = -1A, I _B = -100mA
Base-Emitter Turn-On Voltage	V _{BE(on)}	—	—	-1.1	V	I _C = -1A, V _{CE} = -2V
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C _{obo}	—	—	15	pF	V _{CB} = -10V, f = 1MHz
Current Gain-Bandwidth Product	f _T	100	—	—	MHz	V _{CE} = -5V, I _C = -100mA, f = 100MHz

- Notes:
- For a device surface mounted on a 15mm x 15mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 - Thermal resistance from junction to solder-point (at the end of the collector lead).
 - Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%



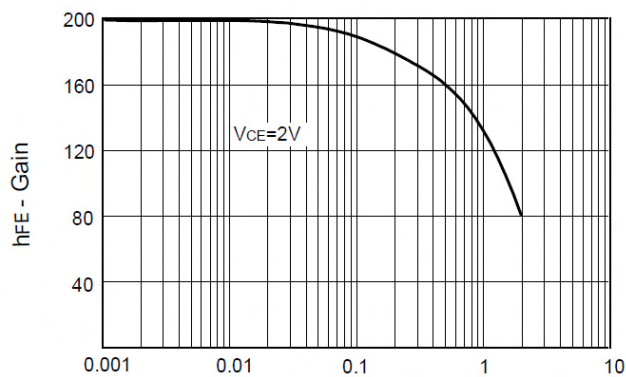
I_C - Collector Current (Amps)

$V_{CE(sat)}$ v I_C



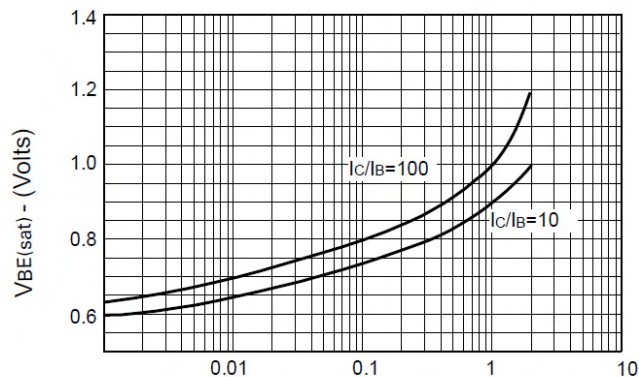
I_C - Collector Current (Amps)

Switching Speeds



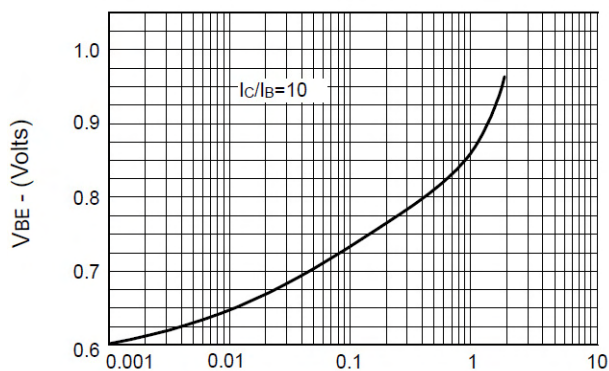
I_C - Collector Current (Amps)

h_{FE} v I_C



I_C - Collector Current (Amps)

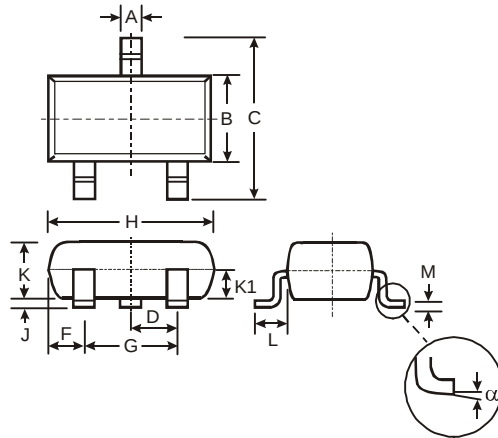
$V_{BE(sat)}$ v I_C



I_C - Collector Current (Amps)

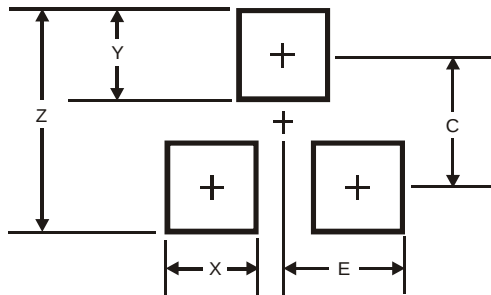
$V_{BE(on)}$ v I_C

Package Outline Dimensions



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	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
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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