

## GM156

### NPN SILICON PLANAR HIGH PERFORMANCE TRANSISTOR

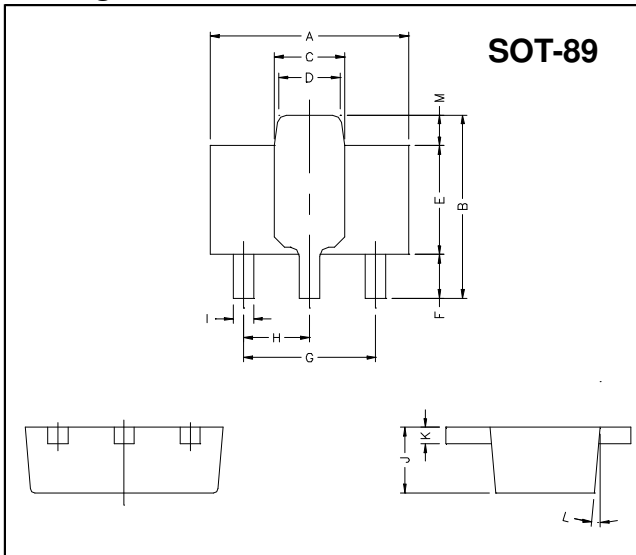
#### Description

The GM156 is designed for general purpose switching and amplifier applications.

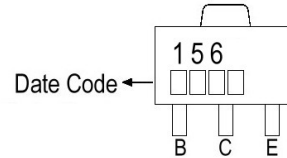
#### Features

- 60 Volt  $V_{CE0}$
- 3 Amp continuous current
- Low saturation voltage

#### Package Dimensions



#### Marking :



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.4	4.6	G	3.00	REF.
B	4.05	4.25	H	1.50	REF.
C	1.50	1.70	I	0.40	0.52
D	1.30	1.50	J	1.40	1.60
E	2.40	2.60	K	0.35	0.41
F	0.89	1.20	L	5° TYP.	
			M	0.70 REF.	

#### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

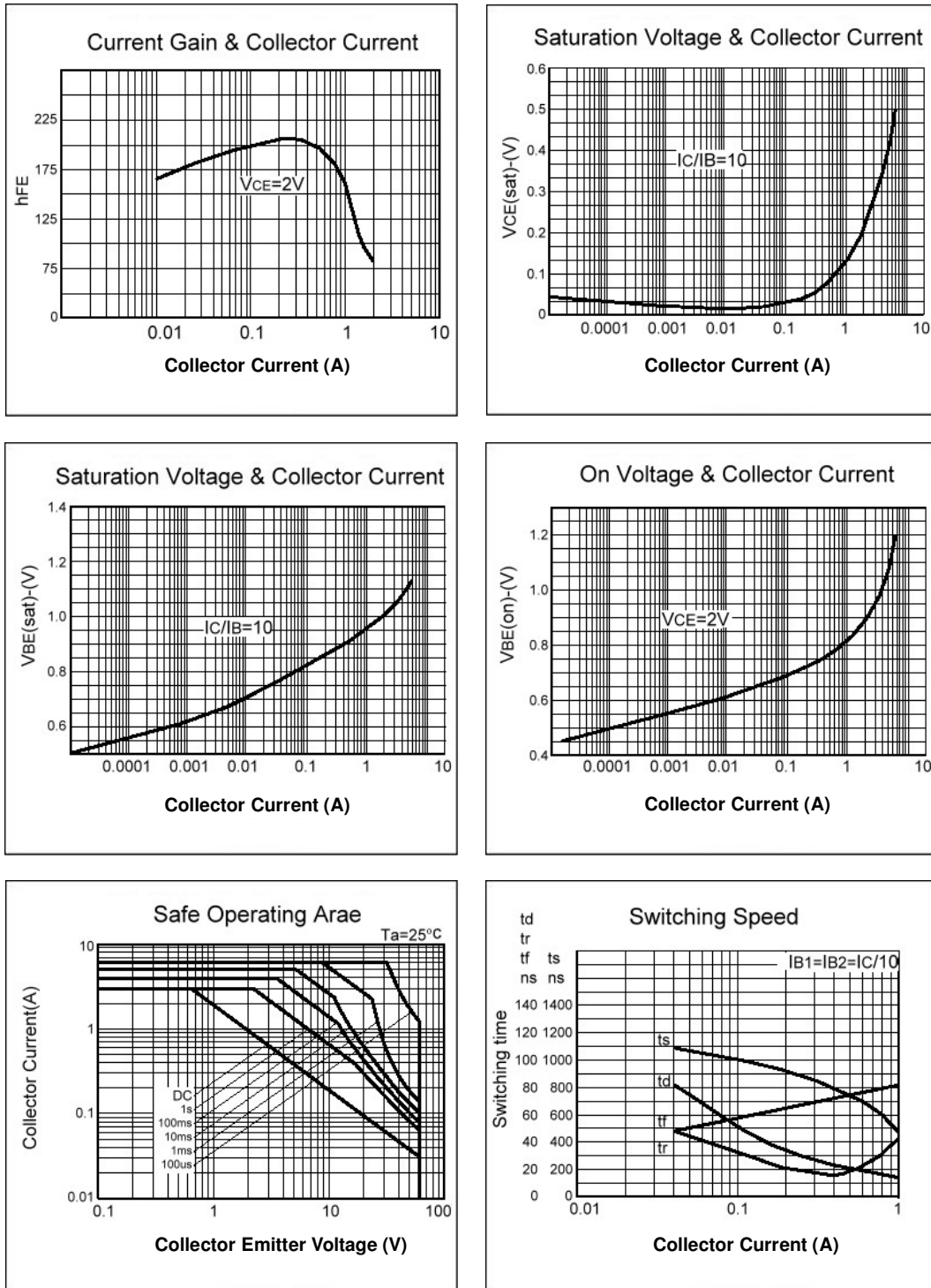
Parameter	Symbol	Ratings	Unit
Junction Temperature	$T_j$	+150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55~+150	$^\circ\text{C}$
Collector to Base Voltage	$V_{CBO}$	80	V
Collector to Emitter Voltage	$V_{CEO}$	60	V
Emitter to Base Voltage	$V_{EBO}$	5	V
Collector Current (DC)	$I_c$	3	A
Collector Current (Pulse)	$I_c$	6	A
Total Power Dissipation	$P_D$	1.2	W

#### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ , unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
$V_{CBO}$	80	-	-	V	$I_c=100\mu\text{A}$ , $I_E=0$
* $V_{CEO}$	60	-	-	V	$I_c=10\text{mA}$ , $I_B=0$
$V_{EBO}$	5	-	-	V	$I_E=100\mu\text{A}$ , $I_c=0$
$I_{CBO}$	-	-	100	nA	$V_{CB}=60\text{V}$ , $I_E=0$
$I_{EBO}$	-	-	100	nA	$V_{EB}=4\text{V}$ , $I_c=0$
* $V_{CE(sat)1}$	-	0.12	0.3	V	$I_c=1\text{A}$ , $I_B=0.1\text{A}$
* $V_{CE(sat)2}$	-	0.43	0.6	V	$I_c=3\text{A}$ , $I_B=0.3\text{A}$
* $V_{BE(sat)}$	-	0.9	1.25	V	$I_c=1\text{A}$ , $I_B=0.1\text{A}$
* $V_{BE(on)}$	-	0.8	1.0	V	$I_c=1\text{A}$ , $V_{CE}=2\text{V}$
* $h_{FE1}$	70	200	-		$V_{CE}=2\text{V}$ , $I_c=50\text{mA}$
* $h_{FE2}$	100	200	300		$V_{CE}=2\text{V}$ , $I_c=500\text{mA}$
* $h_{FE3}$	80	170	-		$V_{CE}=2\text{V}$ , $I_c=1\text{A}$
* $h_{FE4}$	40	80	-		$V_{CE}=2\text{V}$ , $I_c=2\text{A}$
fT	140	175	-	MHz	$V_{CE}=5\text{V}$ , $I_c=100\text{mA}$ , $f=100\text{MHz}$
Cob	-	-	30	pF	$V_{CB}=10\text{V}$ , $f=1\text{MHz}$
ton	-	45	-	ns	$V_{CC}=10\text{V}$ , $I_c=500\text{mA}$ , $I_{B1}=I_{B2}=50\text{mA}$
toff	-	800	-		

\*Measured under pulse condition. Pulse width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device.

## Characteristics Curve



**Important Notice:**

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of GTM.
- GTM reserves the right to make changes to its products without notice.
- GTM semiconductor products are not warranted to be suitable for use in life-support Applications, or systems.
- GTM assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.

**Head Office And Factory:**

- **Taiwan:** No. 17-1 Tatung Rd. Fu Kou Hsin-Chu Industrial Park, Hsin-Chu, Taiwan, R. O. C.
- TEL : 886-3-597-7061 FAX : 886-3-597-9220, 597-0785
- **China:** (201203) No.255, Jang-Jiang Tsai-Lueng RD. , Pu-Dung-Hsin District, Shang-Hai City, China
- TEL : 86-21-5895-7671 ~ 4 FAX : 86-21-38950165