

# Low Saturation Voltage

## PNP Silicon Driver Transistors

Part of the GreenLine™ Portfolio of devices with energy-conserving traits.

This PNP Silicon Epitaxial Planar Transistor is designed to conserve energy in general purpose driver applications. This device is housed in the SOT-23 and SC-59 packages which are designed for low power surface mount applications.

- Low  $V_{CE(sat)}$ , < 0.1 V at 50 mA

### Applications

- LCD Backlight Driver
- Annunciator Driver
- General Output Device Driver

### MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

Rating	Symbol	Value	Unit
Collector-Base Voltage	$V_{(BR)CBO}$	45	Vdc
Collector-Emitter Voltage	$V_{(BR)CEO}$	15	Vdc
Emitter-Base Voltage	$V_{(BR)EBO}$	5.0	Vdc
Collector Current — Continuous	$I_C$	100	mAdc

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Power Dissipation $T_A = 25^\circ\text{C}$	$P_D (1)$	250	mW
Derate above $25^\circ\text{C}$		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 — +150	$^\circ\text{C}$

### DEVICE MARKING

MMBT1010LT1 = GLP; MSD1010T1 = GLP

### ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Condition	Min	Max	Unit
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{ mA}, I_B = 0$	15	—	Vdc
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\text{ }\mu\text{A}, I_C = 0$	5.0	—	Vdc
Collector-Base Cutoff Current	$I_{CBO}$	$V_{CB} = 20\text{ V}, I_E = 0$	—	0.1	$\mu\text{A}$
Collector-Emitter Cutoff Current	$I_{CEO}$	$V_{CE} = 10\text{ V}, I_B = 0$	—	100	$\mu\text{A}$
DC Current Gain	$h_{FE1} (2)$	$V_{CE} = 5\text{ V}, I_C = 100\text{ mA}$	300	600	—
Collector-Emitter Saturation Voltage	$V_{CE(sat)} (2)$	$I_C = 10\text{ mA}, I_B = 1.0\text{ mA}$	—	0.1	Vdc
		$I_C = 50\text{ mA}, I_B = 5.0\text{ mA}$	—	0.1	Vdc
		$I_C = 100\text{ mA}, I_B = 10\text{ mA}$	—	0.19	Vdc
Base-Emitter Saturation Voltage	$V_{BE(sat)} (2)$	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$	—	1.1	Vdc

(1) Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.

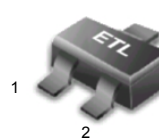
(2) Pulse Test: Pulse Width  $\leq 300\text{ }\mu\text{s}$ , D.C  $\leq 2\%$ .

**MMBT1010LT1**  
**MSD1010T1**

**PNP GENERAL  
PURPOSE DRIVER  
TRANSISTORS  
SURFACE MOUNT**



CASE 318-08, STYLE 6  
SOT-23



CASE 318D-04, STYLE 1  
SC-59

