ETL SEMICONDUCTOR

Low Saturation Voltage

PNP Silicon Driver Transistors

MMBT1010LT1
MSD1010T1

PNP GENERAL PURPOSE DRIVER TRANSISTORS SURFACE MOUNT

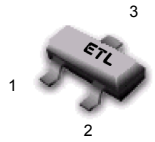
Part of the GreenLine™ Portfolio of devices with energy–conserving traits.

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.

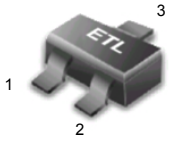
• Low $V_{CE(sat)}$, < 0.1 V at 50 mA

Applications

• LCD Backlight Driver
• Annunciator Driver
• General Output Device Driver



CASE 318–08, STYLE 6
SOT– 23



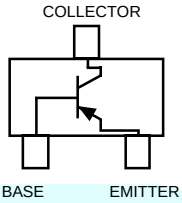
CASE 318D –04, STYLE 1
SC– 59

MAXIMUM RATINGS (T_A = 25°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 °C	P_D (1)	250	mW
Derate above 25°C		1.8	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{stg}	–55 —+150	°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 mA, I_B = 0	15	—	Vdc
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10 µA, I_E = 0	5.0	—	Vdc
Collector-Base Cutoff Current	I_{CBO}	V_{CB} = 20 V, I_E = 0	—	0.1	µA
Collector-Emitter Cutoff Current	I_{CEO}	V_{CE} = 10 V, I_B = 0	—	100	µA
DC Current Gain	h_{FE1} (2)	V_{CE} = 5 V, I_C = 100 mA	300	600	—
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$(2)	I_C = 10 mA, I_B = 1.0 mA	—	0.1	Vdc
		I_C = 50 mA, I_B = 5.0 mA	—	0.1	
		I_C = 100 mA, I_B = 10 mA		0.19	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$(2)	I_C = 100 mA, I_B = 10 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 ≤300 µs, D.C ≤2%.