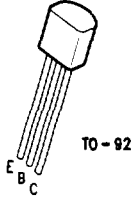




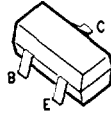
PN4258



TO-92

TL/G/10100-1

MMBT4258



TO-236
(SOT-23)

TL/G/10100-5

PNP Switching Transistor

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Min	Max	Units
OFF CHARACTERISTICS				
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage, (Note 1) ($I_C = 100 \mu\text{Adc}$, $V_{BE} = 0$)	12		Vdc
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage, (Note 1) ($I_C = 3.0 \text{ mAdc}$, $I_B = 0$)	12		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}$, $I_E = 0$)	12		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}$, $I_C = 0$)	4.5		Vdc
I_{CES}	Collector Cutoff Current ($V_{CE} = 6.0 \text{ Vdc}$, $V_{BE} = 0$) ($V_{CE} = 6.0 \text{ Vdc}$, $V_{BE} = 0$, $T_A = 65^\circ\text{C}$)		0.01 5.0	μAdc
ON CHARACTERISTICS (Note 1)				
h_{FE}	DC Current Gain ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 0.5 \text{ Vdc}$) ($I_C = 10 \text{ mAdc}$, $V_{CE} = 3.0 \text{ Vdc}$) ($I_C = 50 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$)	15 30 30	120	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1.0 \text{ mAdc}$) ($I_C = 50 \text{ mAdc}$, $I_B = 5.0 \text{ mAdc}$)		0.15 0.5	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1.0 \text{ mAdc}$) ($I_C = 50 \text{ mAdc}$, $I_B = 5.0 \text{ mAdc}$)	0.75	0.95 1.5	Vdc
SMALL-SIGNAL CHARACTERISTICS				
f_T	Current Gain—Bandwidth Product, (Note 2) ($I_C = 10 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$, $f = 100 \text{ MHz}$) ($I_C = 10 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 100 \text{ MHz}$)	700		MHz
C_{ibo}	Input Capacitance ($V_{BE} = 0.5 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)		3.5	pF
C_{cb}	Collector-Base Capacitance ($V_{CB} = 5.0 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)		3.0	pF

PNP Switching Transistor (Continued)

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted (Continued)

Symbol	Parameter	Min	Max	Units
SWITCHING CHARACTERISTICS				
t_{on}	Turn-On Time	$(V_{CC} = 1.5\text{ Vdc}, V_{BE(off)} = 0\text{V}, I_C = 10\text{ mA}, I_{B1} = 1.0\text{ mA})$	15	ns
t_d	Delay Time		10	ns
t_r	Rise Time		15	ns
t_{off}	Turn-Off Time	$(V_{CC} = 1.5\text{ Vdc}, I_C = 10\text{ mA}, I_{B1} = I_{B2} = 1.0\text{ mA})$	20	ns
t_s	Storage Time		20	ns
t_f	Fall Time		10	ns
t_s	Storage Time ($I_C \approx 10\text{ mA}, I_{B1} \approx 10\text{ mA}, I_{B2} \approx 10\text{ mA}$)		20	ns

Note 1: Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

Note 2: t_T is defined as the frequency at which $|h_{FE}|$ extrapolates unity.

Note 3: For characteristics curves, see Process 65.