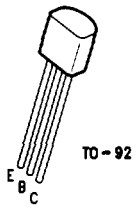
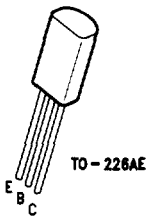
National Semiconductor

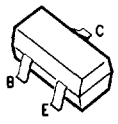
MPSA13 MPSW13 MMBTA13



TL/G/10100-1



TL/G/10100-4



TL/G/10100-5

NPN Darlington Transistor

Electrical Characteristics T_A = 25°C unless otherwise noted

Symbol	Parameter	Min	Max	Units
OFF CHARACTERISTICS				
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage (I_C = 100 μAdc, I_B = 0)	30		Vdc
I_{CBO}	Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0)		100	nAdc
I_{EBO}	Emitter Cutoff Current (V_{EB} = 10 Vdc, I_C = 0)		100	nAdc
ON CHARACTERISTICS (Note 1)				
h_{FE}	DC Current Gain (I_C = 10 mAdc, V_{CE} = 5.0 Vdc) (I_C = 100 mAdc, V_{CE} = 5.0 Vdc)	5000 10,000		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage (I_C = 100 mAdc, I_B = 0.1 mAdc)		1.5	Vdc
$V_{BE(on)}$	Base-Emitter On Voltage (I_C = 100 mAdc, V_{CE} = 5.0 Vdc)		2.0	Vdc
SMALL-SIGNAL CHARACTERISTICS				
f_T	Current-Gain—Bandwidth Product, (Note 2) (I_C = 10 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)	125		MHz

Note 1: Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

Note 2: $f_T = |h_{fe}| \times f_{test}$.

Note 3: For characteristics curves, see Process 05.

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