2N6387, 2N6388

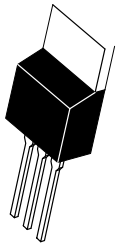
Plastic Medium-Power Silicon Transistors

These devices are designed for general−purpose amplifier and low−speed switching applications.

Features

- High DC Current Gain − h_{FE} = 2500 (Typ) @ I_C = 4.0 Adc
- Collector−Emitter Sustaining Voltage − @ 100 mAdc
  $V_{CEO(sus)}$ = 60 Vdc (Min) − 2N6387
  = 80 Vdc (Min) − 2N6388
- Low Collector−Emitter Saturation Voltage −
  $V_{CE(sat)}$ = 2.0 Vdc (Max) @ I_C
  = 5.0 Adc − 2N6387, 2N6388
- Monolithic Construction with Built−In Base−Emitter Shunt Resistors
- TO−220AB Compact Package
- These Devices are Pb−Free and are RoHS Compliant*

DARLINGTON NPN SILICON POWER TRANSISTORS 8 AND 10 AMPERES 65 WATTS, 60 − 80 VOLTS



TO−220
CASE 221A
STYLE 1

MAXIMUM RATINGS (Note 1)

Rating		Symbol	Value	Unit
Collector−Emitter Voltage	2N6387 2N6388	V_{CEO}	60 80	Vdc
Collector−Base Voltage	2N6387 2N6388	V_{CB}	60 80	Vdc
Emitter−Base Voltage		V_{EB}	5.0	Vdc
Collector Current − Continuous − Peak		I_C	10 15	Adc
Base Current		I_B	250	mAdc
Total Power Dissipation @ T_C = 25°C Derate above 25°C		P_D	65 0.52	

assumed, damage may occur and reliability may be affected.
1. Indicates JEDEC Registered Data.

2N638x = Device Code

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	1.92	°C/W
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	62.5	°C/W

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

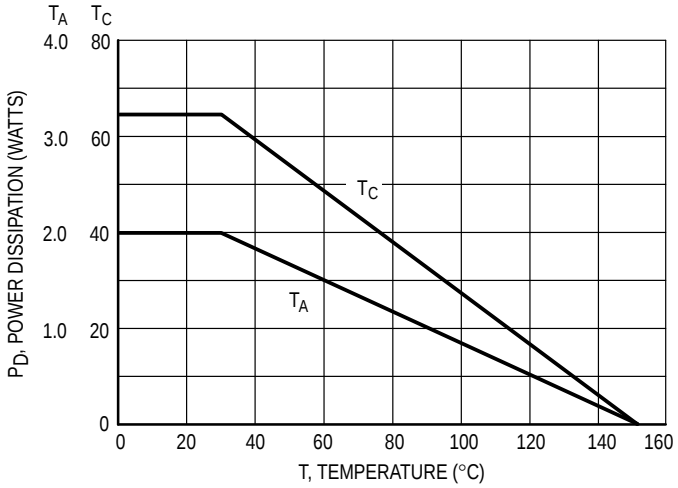


Figure 1. Power Derating

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted) (Note 2)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Sustaining Voltage (Note 3) (I_C = 200 mAdc, I_B = 0)	 2N6387 2N6388	$V_{CEO(sus)}$	 60 80	 – –	Vdc
Collector Cutoff Current (V_{CE} = 60 Vdc, I_B = 0) (V_{CE} = 80 Vdc, I_B = 0)	 2N6387 2N6388	I_{CEO}	 – –	 1.0 1.0	mAdc
Collector Cutoff Current (V_{CE} = 60 Vdc, $V_{EB(off)}$ = 1.5 Vdc) (V_{CE} − 80 Vdc, $V_{EB(off)}$ = 1.5 Vdc) (V_{CE} = 60 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 125°C) (V_{CE} = 80 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 125°C)	 2N6387 2N6388 2N6387 2N6388	I_{CEX}	 – – – –	 300 300 3.0 3.0	μAdc mAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)		I_{EBO}	–	5.0	mAdc
ON CHARACTERISTICS (Note 3)					
DC Current Gain (I_C = 5.0 Adc, V_{CE} = 3.0 Vdc) (I_C = 1 0 Adc, V_{CE} = 3.0 Vdc)	 2N6387, 2N6388 2N6387, 2N6388	h_{FE}	 1000 100	 20,000 –	–
Collector−Emitter Saturation Voltage (I_C = 5.0 Adc, I_B = 0.01 Adc) (I_C = 10 Adc, I_B = 0.1 Adc)	 2N6387, 2N6388 2N6387, 2N6388	$V_{CE(sat)}$	 – –	 2.0 3.0	Vdc
Base−Emitter On Voltage (I_C = 5.0 Adc, V_{CE} = 3.0 Vdc) (I_C = 10 Adc, V_{CE} = 3.0 Vdc)	 2N6387, 2N6388 2N6387, 2N6388	$V_{BE(on)}$	 – –	 2.8 4.5	Vdc
DYNAMIC CHARACTERISTICS					
Small−Signal Current Gain (I_C = 1.0 Adc, V_{CE} = 5.0 Vdc, f_{test} = 1.0 MHz)					

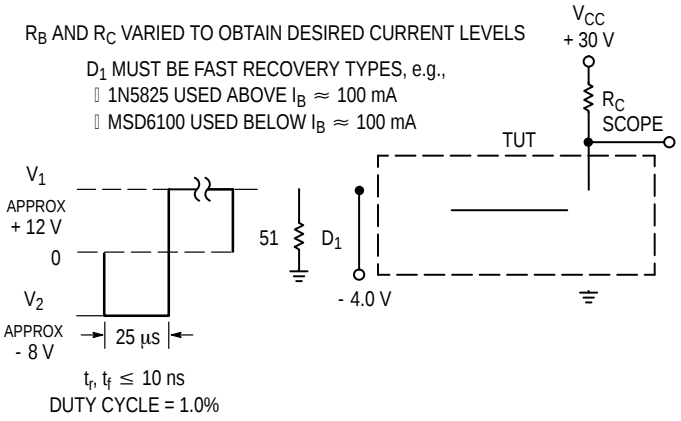


Figure 2. Switching Times Test Circuit

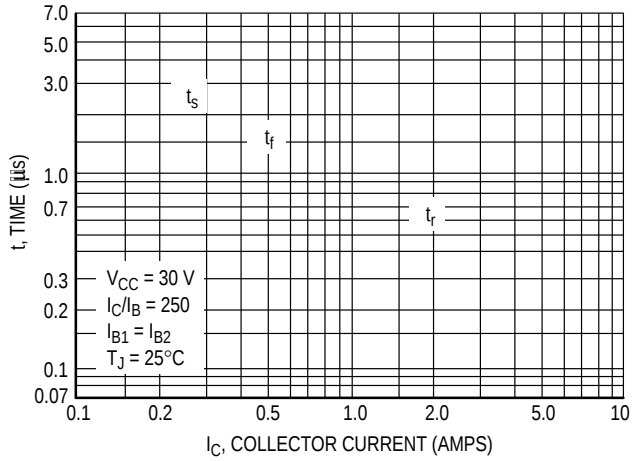


Figure 3. Switching Times

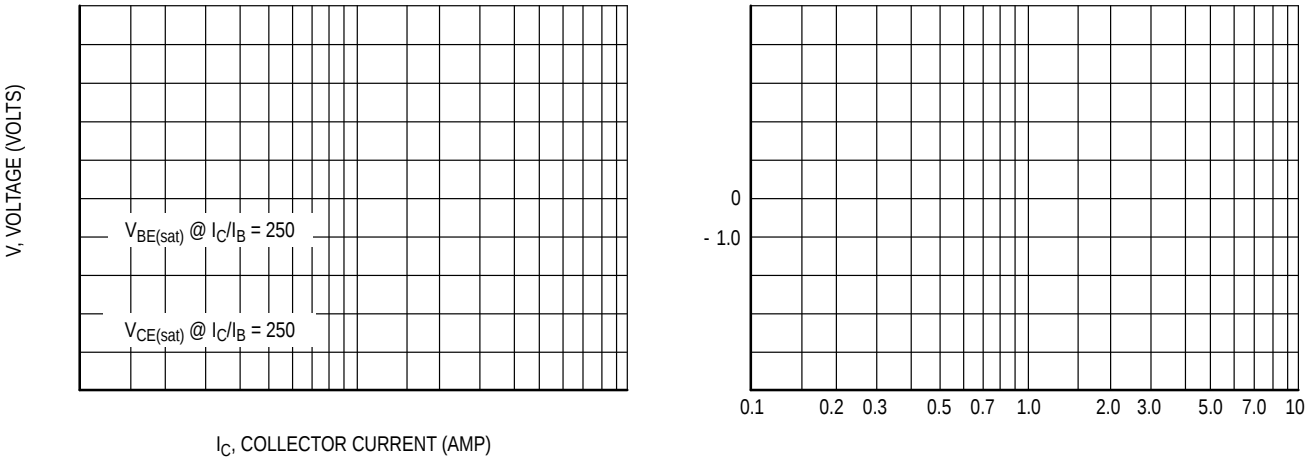


Figure 10. “On” Voltages