NEW ENGLAND SEMICONDUCTOR

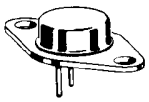
2N5428
2N5430

MEDIUM-POWER NPN SILICON POWER TRANSISTORS

7 AMPERE
POWER TRANSISTORS
NPN SILICON
80 - 100 VOLTS
40 WATTS

...designed for switching and wide-band amplifier applications.

- LOW COLLECTOR-EMITTER SATURATION VOLTAGE - $V_{CE(SAT)}$ = 1.2 VDC (MAX) @ I_C = 7.0 ADC
- DC CURRENT GAIN SPECIFIED TO 7 AMPERES
- EXCELLENT SAFE OPERATING AREA



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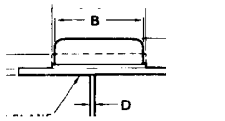
MAXIMUM RATINGS(1)

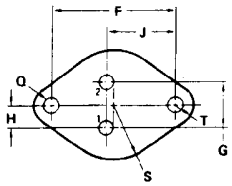
Rating	Symbol	2N5428	2N5430	Unit
Collector-Emitter Voltage	V_{CEO}	80	100	Vdc
Collector-Base Voltage	V_{CB}	80	100	Vdc
Emitter-Base Voltage	V_{EB}	6.0		Vdc
Collector Current - Continuous	I_C	7.0		Adc
Base Current	I_B	1.0		Adc
Total Power Dissipation @T_C = 25°C Derate above 25°C	P_D	40 228		Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	4.37	°C/W

(1) Indicates JEDEC Registration Data





STYLE 1:
PIN 1. BASE
2. EMITTER
CASE: COLLECTOR

DIM	MILLIMETERS MIN	MAX	INCHES MIN	MAX
B	11.94	12.70	0.470	0.500
C	6.35	8.64	0.250	0.340
D	0.71	0.86	0.028	0.034
E	1.27	1.91	0.050	0.075
F	24.33	24.43	0.958	0.962
G	4.83	5.33	0.190	0.210
H	2.41	2.67	0.095	0.105
J	14.48	14.99	0.570	0.590
K	9.14	–	0.360	–
P	–	1.27	–	0.050
Q	3.61	3.86	0.142	0.152
S	–	8.89	–	0.350
T	–	3.68	–	0.145
U	–	15.75	–	0.620

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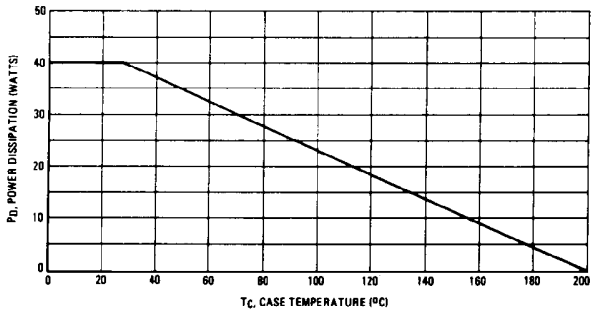
FIGURE 1 – POWER-TEMPERATURE DERATING CURVE



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1-800-446-1158 / (978) 794-1666 / FAX: (978) 689-0803

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

Characteristics		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter SustainingVoltage (1)		$V_{CEO(sus)}$			Vdc
I_C = 50 mAdc, I_B = 0	2N5428		80		
	2N5430		100		
Collector Cutoff Current		I_{CEO}			µAdc
V_{CE} = 75 Vdc, I_B = 0	2N5428			100	
V_{CE} = 90 Vdc, I_B = 0	2N5430			100	
Collector Cutoff Current		I_{CEX}			
V_{CE} = 75 Vdc, $V_{EB(off)}$ = 1.5 Vdc	2N5428			10	µAdc
V_{CE} = 90 Vdc, $V_{EB(off)}$ = 1.5 Vdc	2N5430			10	
V_{CE} = 75 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C	2N5428			1.0	mAdc
V_{CE} = 90 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C	2N5430			1.0	
Collector Cutoff Current		I_{CBO}			
V_{CB} = Rated V_{CB}, I_E = 0				10	µAdc
Emitter Cutoff Current		I_{EBO}			
V_{BE} = 6.0 Vdc, I_C = 0				100	µAdc
ON CHARACTERISTICS (1)					
DC Current Gain		h_{FE}			-
I_C = 500 mAdc, V_{CE} = 2.0 Vdc	2N5428, 2N5430		60		
I_C = 2.0 Adc, V_{CE} = 2.0 Vdc	2N5428, 2N5430		60	240	
I_C = 5.0 Adc, V_{CE} = 2.0 Vdc	2N5428, 2N5430		40		
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
I_C = 2.0 Adc, I_B = 0.2 Adc				0.7	
I_C = 7.0 Adc, I_B = 0.7 Adc				1.2	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$			Vdc
I_C = 2.0 Adc, I_B = 0.2 Adc				1.2	
I_C = 7.0 Adc, I_B = 0.7 Adc				2.0	
DYNAMIC CHARACTERISTICS					
Current-Gain--Bandwidth Product		f_T	30		MHz
I_C = 500 mAdc, V_{CE} = 10 Vdc, f = 10 MHz					
Output Capacitance		C_{ob}			
V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz				250	pF
Input Capacitance		C_{ib}			
V_{BE} = 2.0 Vdc, I_C = 0, f = 100 kHz				1000	pF
SWITCHING CHARACTERISTICS					
Delay Time	V_{CC} = 40 Vdc, $V_{EB(off)}$ = 3.0 Vdc,	t_d		100	ns
Rise Time	I_C = 2.0 Adc, I_{B1} = 200 mAdc	t_r		100	ns
Storage Time	V_{CC} = 40 Vdc, I_C = 2.0 Adc	t_s		2.0	µs
Fall Time	I_{B1} = I_{B2} = 200 mAdc	t_f		200	ns

(1)Pulse Test: Pulse Width ≈ 300µs, Duty Cycle ≈ 2.0%.

FIGURE 2 – SWITCHING TIME TEST CIRCUIT

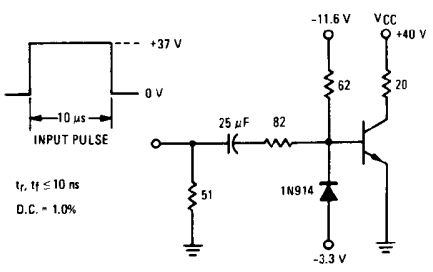
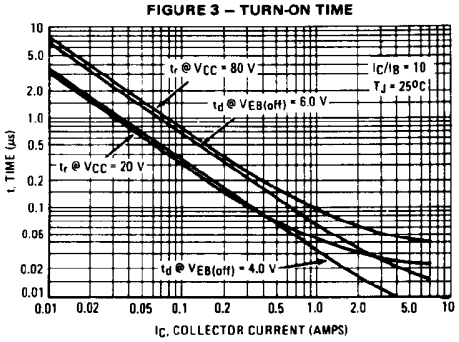


FIGURE 3 – TURN-ON TIME



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