



NES

NEW ENGLAND SEMICONDUCTOR

2N3738
2N3739*

*also available as
JAN, JANTX,
JANTXV

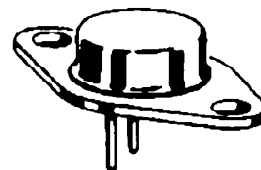
HIGH VOLTAGE SILICON POWER TRANSISTORS

...designed for high-speed switching, linear amplifier applications,
high-voltage operational amplifiers, switching regulators, converters,
inverters, deflection stages and high fidelity amplifiers.

- COLLECTOR -EMITTER SUSTAINING VOLTAGE
 $V_{CEO(sus)} = 225 \text{ Vdc @ } I_C = 5.0 \text{ mAdc (2N3738)}$
 $= 300 \text{ Vdc @ } I_C = 5.0 \text{ mAdc (2N3739)}$
- DC CURRENT GAIN --
 $h_{FE} = 40-200 @ I_C = 100 \text{ mAdc}$
- CURRENT-GAIN -- BANDWIDTH PRODUCT --
 $f_T = 10 \text{ MHz (Min) @ } I_C = 100 \text{ mAdc}$
- $I_{S/b}$ RATED TO 2.0 AMPERES

**1.0 AMPERE
POWER TRANSISTORS
NPN SILICON**

**225, 300 VOLTS
20 WATTS**

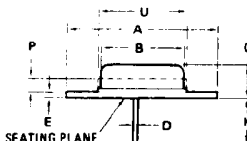
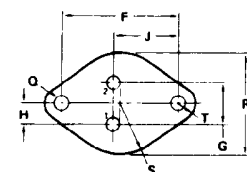


TO-66

MAXIMUM RATINGS

RATINGS	SYMBOL	2N3738	2N3739	UNITS
Collector-Emitter Voltage	V_{CEO}	225	300	Vdc
Collector-Base Voltage	V_{CB}	250	325	Vdc
Emitter-Base Voltage	V_{EB}	6.0		Vdc
Collector Current -- Continuous	I_C	1.0		Adc
-- Peak		2.0		
Base Current -- Continuous	I_B	0.50		Adc
-- Peak		1.0		
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	20		W
Derate above 25°C		0.133		W/ $^\circ\text{C}$
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-55 to +200		$^\circ\text{C}$

MECHANICAL OUTLINE



PIN 1: BASE
PIN 2: EMITTER
CASE: COLLECTOR

DIM	MILLIMETER		INCHES	
	MIN	MAX	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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1-800-446-1158 / (978) 794-1666 / FAX: (978) 689-0803

T4-4.8-860-361 REV: --



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ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristics	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage $I_C = 5.0 \text{ mA dc}, I_B = 0$	$V_{CEO(sus)}$			Vdc
2N3738		225		
2N3739		300		
Collector Cutoff Current $V_{CE} = 125 \text{ Vdc}, I_B = 0$	I_{CEO}		0.25	mA dc
2N3738			0.25	
$V_{CE} = 200 \text{ Vdc}, I_B = 0$				
2N3739				
Emitter Cutoff Current $V_{EB} = 6.0 \text{ Vdc}$	I_{EBO}		0.1	mA dc
ON CHARACTERISTICS (1)				
DC Current Gain $I_C = 50 \text{ mA dc}, V_{CE} = 10 \text{ Vdc}$	h_{FE}	30	-	
$I_C = 100 \text{ mA dc}, V_{CE} = 10 \text{ Vdc}$		40	200	
$I_C = 250 \text{ mA dc}, V_{CE} = 10 \text{ Vdc}$		25	-	
Collector-Emitter Saturation Voltage (1) $I_C = 250 \text{ mA dc}, I_B = 25 \text{ mA dc}$	$V_{CE(sat)}$		2.5	Vdc
Base-Emitter "ON" Voltage (1) $I_C = 100 \text{ mA dc}, V_{CE} = 10 \text{ Vdc}$	$V_{BE(on)}$		1.0	Vdc
DYNAMIC CHARACTERISTICS				
Forward Current Transfer Ratio $I_C = 100 \text{ mA dc}, V_{CE} = 20 \text{ Vdc}, f = 1.0 \text{ kHz}$	h_{fe}	35		
Output Capacitance $V_{CB} = 100 \text{ Vdc}, I_E = 0, f = 100 \text{ kHz}$	C_{ob}		20	p ^F

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

SX LEVEL RELIABILITY TESTING

100% SCREENING	GROUP A	GROUP B (Sample)	GROUP C (Sample)
Internal Visual	Visual and Mechanical	Solderability	Physical Dimensions
Temp Cycle	DC Static Tests 25°C	Temp Cycle	Thermal Shock
Thermal Response	DC Static Tests High Temp	Fine and Gross Leak	Terminal Strength
Constant	DC Static Tests Low Temp	Bond Strength	Hermetic Seal
Acceleration	Dynamic Tests @ 25°C	Intermittent Op Life	Moisture Resistance
PIND		Steady State Op life	Shock Test
Fine and Gross Leak		Thermal Resistance	Vibration Test
HTRB		Hi-Temp (non operating)	Constant Acceleration
Power Burn In			Salt Atmosphere
			Operation Life

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