

# New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.  
 SPRINGFIELD, NEW JERSEY 07081  
 U.S.A.

TELEPHONE: (973) 376-2922  
 (212) 227-6005  
 FAX: (973) 376-8960

## SWITCHMODE SERIES NPN SILICON POWER TRANSISTORS

The 2N6546 and 2N6547 transistors are designed for high-voltage, high-speed, power switching inductive circuits where fall time is critical. They are particularly suited for 115 and 220 volt line operated switch-mode applications such as:

- \* Switching Regulators
- \* PWM Inverters and Motor Controls
- \* Solenoid and Relay Drivers
- \* Deflection Circuits

### Specification Features-

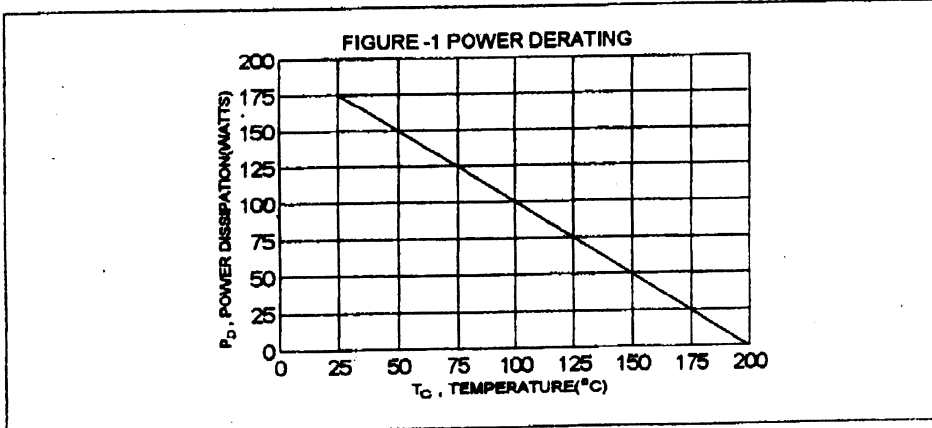
High Temperature Performance Specified for: Reversed Biased SOA with inductive loads  
 Switching Times with inductive Loads  
 Saturation Voltages, Leakage Currents.

### MAXIMUM RATINGS

Characteristic	Symbol	2N6546	2N6547	Unit
Collector-Emitter Voltage	$V_{CE0}$	300	400	V
Collector-Emitter Voltage	$V_{CEV}$	650	850	V
Collector-Base Voltage	$V_{EB0}$	9.0		V
Collector current - Continuous	$I_C$	15		A
- Peak	$I_{CM}$	30		
Base current - Continuous	$I_B$	10		A
Emitter current - Continuous	$I_E$	25		A
- Peak	$I_{EM}$	50		
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	$P_D$	175		W
Derate above $25^\circ\text{C}$		1.0		W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	- 65 to +200		$^\circ\text{C}$

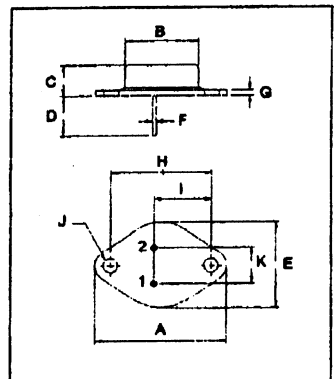
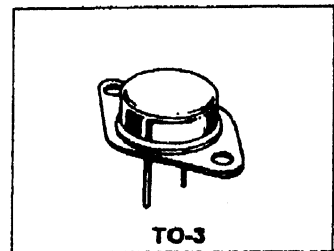
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.0	$^\circ\text{C/W}$



**NPN  
 2N6546  
 2N6547**

**15 AMPERE  
 NPN SILICON  
 POWER TRANSISTORS  
 300 - 400 VOLTS  
 175 WATTS**



PN 1. BASE  
 2. EMITTER  
 COLLECTOR (CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.98
B	19.28	22.23
C	7.98	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.87	11.18

**Quality Semi-Conductors**

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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

## OFF CHARACTERISTICS

Collector - Emitter Sustaining Voltage (1) ( $I_C = 100 \text{ mA}$ , $I_B = 0$ )	2N6546 2N6547	$V_{CE(sus)}$	300 400	V
Collector Cutoff Current ( $V_{CE} = 650 \text{ V}$ , $V_{BE(off)} = 1.5 \text{ V}$ ) ( $V_{CE} = 850 \text{ V}$ , $V_{BE(off)} = 1.5 \text{ V}$ ) ( $V_{CE} = 650 \text{ V}$ , $V_{BE(off)} = 1.5 \text{ V}$ , $T_c = 100^\circ\text{C}$ ) ( $V_{CE} = 850 \text{ V}$ , $V_{BE(off)} = 1.5 \text{ V}$ , $T_c = 100^\circ\text{C}$ )	2N6546 2N6547 2N6546 2N6547	$I_{CEV}$	1.0 1.0 4.0 4.0	mA
Emitter Cutoff Current ( $V_{EB} = 9.0 \text{ V}$ , $I_C = 0$ )		$I_{EBO}$	1.0	mA

## ON CHARACTERISTICS(1)

DC Current Gain ( $I_C = 5.0 \text{ A}$ , $V_{CE} = 2.0 \text{ V}$ ) ( $I_C = 10 \text{ A}$ , $V_{CE} = 2.0 \text{ V}$ )		$h_{FE}$	12 6.0	60 30	
Collector-Emitter Saturation Voltage ( $I_C = 10 \text{ A}$ , $I_B = 2.0 \text{ A}$ ) ( $I_C = 15 \text{ A}$ , $I_B = 3.0 \text{ A}$ )		$V_{CE(sat)}$		1.5 5.0	V
Base-Emitter Saturation Voltage ( $I_C = 10 \text{ A}$ , $I_B = 2.0 \text{ A}$ )		$V_{BE(sat)}$		1.6	V

## DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product (2) ( $I_C = 500 \text{ mA}$ , $V_{CE} = 10 \text{ V}$ , $f = 1.0 \text{ MHz}$ )		$f_T$	6.0	35	MHz
--	--	-------	-----	----	-----

## SWITCHING CHARACTERISTICS

Delay Time	$V_{CC} = 250 \text{ V}$ $I_C = 10 \text{ A}$ $I_{B1} = -I_{B2} = 2.0 \text{ A}$ $t_p = 0.1 \text{ ms}$ Duty Cycle $\leq 2.0\%$	$t_d$		0.05	us
Rise Time		$t_r$		1.0	us
Storage Time		$t_s$		4.0	us
Fall Time		$t_f$		0.8	us

(1) Pulse Test: Pulse width = 300 us, Duty Cycle  $\leq 2.0\%$ (2)  $f_T = |h_{re}| \cdot f_{test}$