

# New Jersey Semi-Conductor Products, Inc.

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## 2N6674, 2N6675, RJH6674, RJH6675

### Power Transistors

High-Voltage N-P-N Types for Off-Line Power Supplies and Other High-Voltage Switching Applications

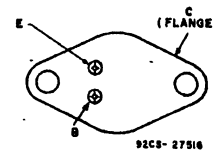
**Features:**

- Fast switching speed
- High voltage ratings:  
 $V_{CEX}=350\text{ V to }450\text{ V}$
- Low  $V_{CE(sat)}$  at  $I_C=10\text{ A}$

**Applications:**

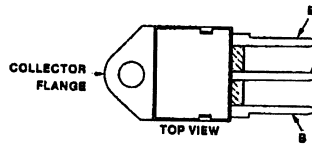
- Off-line power supplies
- High-voltage inverters
- Switching regulators

**TERMINAL DESIGNATIONS**



2N6674  
 2N6675

**JEDEC TO-204AA**



RJH6674  
 RJH6675

**JEDEC TO-218AC**

92CS-40257

The 2N6674, 2N6675, RJH6674, and RJH6675 SwitchMax series of silicon n-p-n power transistors feature high-voltage capability, fast switching speeds, and low saturation voltages, together with high safe-operating-area (SOA) ratings. They are specially designed for off-line power supplies, converter circuits, and pulse-width-modulated regulators. These high-voltage, high-speed transistors are tested for parameters that are essential to the design of high-power switching circuits. Switching times, including inductive turn-off time, and

saturation voltages are specified at 100°C to provide information necessary for worst-case design.

The 2N6674 and 2N6675 transistors are supplied in steel JEDEC TO-204AA hermetic packages. The RJH6674 and RJH6675 transistors are supplied in JEDEC TO-218AC plastic packages.

**MAXIMUM RATINGS, Absolute-Maximum Values:**

	RJH6674	RJH6675	2N6674	2N6675	
* $V_{CEV}$					
$V_{BE}=-1.5\text{ V}$ .....	450	650	450	650	V
* $V_{CEX}(\text{Clamped})$					
$V_{BE}=-1.5\text{ V}$ .....	350	450	350	450	V
* $V_{CEO}$ .....	300	400	300	400	V
* $V_{ESD}$ .....					V
$I_C(\text{sat})$ .....					A
* $I_C$ .....					A
$I_{CM}$ .....					A
* $I_B$ .....					A
* $P_T$					A
$T_C$ up to 25°C .....					175 W
$T_C$ above 25°C, derate linearly .....	1.4	1.4	1	1	W/°C
* $T_{stg}, T_J$					-65 to 200 °C
* $T_L$					
At distance $\geq 1/16$ in. (1.58 mm) from seating plane for 10 s max .....				235	°C
$T_L$					
At distance $\geq 1/8$ " in (3.17 mm) from seating plane for 10 s max .....		235			°C

\*In accordance with JEDEC registration data (2N6674, 2N6675 only).



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

## 2N6674, 2N6675, RJH6674, RJH6675

### ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	TEST CONDITIONS				LIMITS				UNITS
	VOLTAGE		CURRENT		2N6674 RJH6674		2N6675 RJH6675		
	V <sub>dc</sub>	V <sub>dc</sub>	I <sub>c</sub>	I <sub>b</sub>	Min.	Max.	Min.	Max.	

*T<sub>c</sub>* = 25° C

I <sub>cev</sub>	450 650	-1.5 -1.5			—	0.1	—	—	mA
I <sub>ebo</sub>		-7	0		—	2	—	2	
V <sub>ceo(sus)</sub> <sup>b</sup>			0.2 <sup>a</sup>	0	300	—	400	—	V
h <sub>FE</sub>	2		10 <sup>a</sup>		8	20	8	20	
V <sub>BE(sat)</sub>			10 <sup>a</sup>	2	—	1.5	—	1.5	V
V <sub>CE(sat)</sub>			10 <sup>a</sup>	2	—	1	—	1	
			15 <sup>a</sup>	5	—	5	—	5	
V <sub>CEX</sub> <sup>b</sup> (Clamped E <sub>s</sub> ) L=50 μH, R <sub>BE</sub> =2 Ω		-4	10	2	350	—	450	—	
I <sub>s</sub> <sup>b</sup>	30 100		5.9 0.25		1 1	—	1 1	—	s
h <sub>ie</sub>   f=5 MHz	10		1		3	10	3	10	
f <sub>T</sub>	10		1		15	50	15	50	MHz
C <sub>obo</sub> f=0.1 MHz	10 <sup>c</sup>				150	500	150	500	pF
t <sub>d</sub> <sup>d</sup>		-6	10	2	—	0.1	—	0.1	μs
t <sub>r</sub> <sup>d</sup>		-6	10	2	—	0.6	—	0.6	
t <sub>s</sub> <sup>d</sup>		-6	10	2 <sup>e</sup>	—	2.5	—	2.5	
t <sub>f</sub> <sup>d</sup>		-6	10	2 <sup>e</sup>	—	0.5	—	0.5	
I <sub>c</sub> V <sub>CC</sub> =135 V, L=50 μH, R <sub>C</sub> ≤ 13.5 Ω, Collector clamped to V <sub>CEX</sub>		-6	10	2 <sup>e</sup>	—	0.5	—	0.5	

*T<sub>c</sub>* = 100° C

I <sub>cev</sub>	450 650	-1.5 -1.5			—	1	—	—	mA
V <sub>CE(sat)</sub>			10 <sup>a</sup>	2	—	2	—	2	
t <sub>d</sub> <sup>d</sup>		-6	10	2	—	1	—	1	μs
t <sub>s</sub> <sup>d</sup>		-6	10	2 <sup>e</sup>	—	4	—	4	
t <sub>f</sub> <sup>d</sup>		-6	10	2 <sup>e</sup>	—	1	—	1	
I <sub>c</sub> V <sub>CC</sub> =135 V, L=50 μH, R <sub>C</sub> ≤ 13.5 Ω, Collector clamped to V <sub>CEX</sub>		-6	10	2 <sup>e</sup>	—	0.8	—	0.8	
R <sub>θJC</sub> 2N6674, 2N6675	10		5		—	1	—	1	
R <sub>θJC</sub> RJH6674, RJH6675	10		5		—	0.71	—	0.71	°C/W

<sup>a</sup>Pulsed: pulse duration=300 μs, duty factor ≤ 2%.

<sup>b</sup>CAUTION: The sustaining voltage V<sub>ceo(sus)</sub> and V<sub>CEX</sub> MUST NOT be measured on a curve tracer.

<sup>c</sup>In accordance with JEDEC registration data (2N6674, 2N6675 only).

<sup>d</sup>V<sub>CE</sub> value.

<sup>e</sup>V<sub>CC</sub>=135 V, t<sub>p</sub>=20 μs.

<sup>f</sup>I<sub>B1</sub> = -I<sub>B2</sub>.