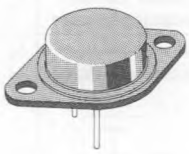
SGS-THOMSON
MICROELECTRONICS

2N6674
2N6675

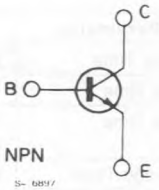
NPN HIGH VOLTAGE POWER TRANSISTORS

- SWITCHING REGULATORS
- INVERTERS
- SOLENOID AND RELAY DRIVERS
- MOTOR CONTROLS
- DEFLECTION CIRCUITS



TO-3

INTERNAL SCHEMATIC DIAGRAM



DESCRIPTION

High voltage, high speed switching power transistors suited for use on the 220 and 380V mains.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	2N6674	2N6675	Unit
V_{CEV}	Collector-emitter Voltage (V_{BE} = −1.5V)	450	650	V
V_{CEX}	Collector-emitter Voltage	350	400	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	300	450	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	7		V
I_C	Collector Current	15		A
I_{CM}	Collector Peak Current	20		A
I_B	Base Current	5		A
P_{tot}	Total Dissipation at T_c < 25°C	175		W
T_{stg}	Storage Temperature	− 65 to 200		°C
T_j	Max. Operating Junction Temperature	200		°C

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cutoff Current	$V_{CE} = V_{CEV}$ $V_{BE} = -1.5V$ $V_{CE} = V_{CEV}$ $V_{BE} = -1.5V$ $T_c = 100°C$			0.1 1	mA mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 7V			2	mA
$V_{CEO(sus)}$*	Collector Emitter Sustaining Voltage	I_C = 0.2A L_C = 25mH for **2N6674** for **2N6675**	300 400			V V
$V_{CEX(sus)}$*	Collector-emitter Sustaining Voltage	I_C = 10A L_C = 50µH I_B = 2A R_{BB} = 2Ω V_{BB} = – 4V for **2N6674** for **2N6675**	 350 450		 	 V V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 10A I_B = 2A I_C = 10A I_B = 2A T_c = 100°C I_C = 15A I_B = 5A			1 2 5	V V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 10A I_B = 2A			1.5	V
h_{FE}*	DC Current Gain	I_C = 10A V_{CE} = 2V	8			
h_{fe}	Small Signal Current Gain	I_C = 1A V_{CE} = 10V f = 5MHz	3		10	

RESISTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_d	Delay Time	V_{CC} = 135V I_C = 10A t_p = 20µs V_{BB} = –6V I_t# p= 20µs			0.1	µs
t_r	Rise Time				0.6	µs
t_r	Rise Time	V_{CC} = 135V I_C = 10A t_p = 20µs V_{BB} = –6V I_{B1} = 2A T_c = 100°C			1	µs
t_s	Storage Time	V_{CC} = 135V I_C = 10A t_p = 20µs V_{BB} = – 6V I_{B1} = – I_{B2} = 2A			2.5	µs
t_f	Fall Time				0.5	µs
t_s	Storage Time	V_{CC} = 135V I_C = 10A t_p = 20µs V_{BB} = – 6V I_{B1} = – I_{B2} = 2A T_c = 100°C			4	µs
t_f	Fall Time				1	µs

INDUCTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_c	Crossover Time	V_{CC} = 135V I_C = 10A I_C = 50µH R_C = 13.5Ω I_{B1} = – I_{B2} = 2A V_{clamp} = V_{CEX} T_c = 25°C T_c = 100°C			 0.5 0.8	 µs µs

* Pulsed : Pulse duration = 300 µs, duty cycle = 2 %.

Figure 1 : Test Circuit RBSOA.

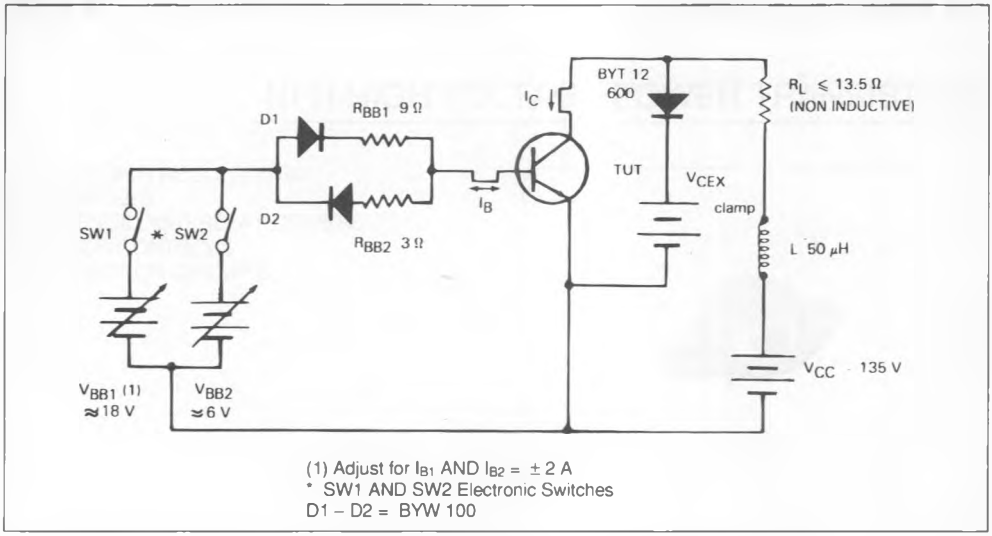


Figure 2 : Maximum Operating Conditions for Switching between Saturation and Cut-off.