SGS-THOMSON MICROELECTRONICS

2N6035/2N6036 2N6038/2N6039

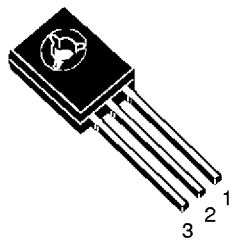
COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- 2N6036 AND 2N6039 ARE SGS-THOMSON PREFERRED SALESTYPES

DESCRIPTION

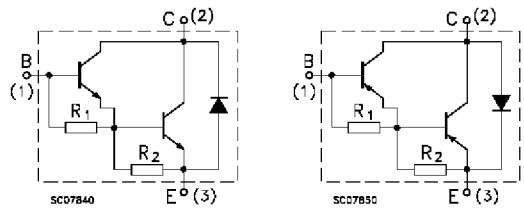
The 2N6038 and 2N6039 are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration mounted in Jedec SOT-32 plastic package.

The complementary PNP types are 2N6035 and 2N6036 respectively.



SOT-32

INTERNAL SCHEMATIC DIAGRAM



R_1 Typ. = 10 KΩ R_2 Typ. = 150 Ω

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value		Unit
		PNP	2N6035	2N6036	
		NPN	2N6038	2N6039	
V_{CBO}	Collector-Base Voltage (I_E = 0)		60	80	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)		60	80	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)		5		V
I_C	Collector Current		4		A
I_{CM}	Collector Peak Current		8		A
I_B	Base Current		0.1		A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$		40		W
T_{stg}	Storage Temperature		-65 to 150		^oC
T_j	Max. Operating Junction Temperature		150		^oC

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case Max	3.12	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient Max	83.3	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEX}	Collector Cut-off Current (V_{BE} = -1.5V)	V_{CE} = rated V_{CEO} V_{CE} = rated V_{CEO} T_c = 125 °C			0.1 0.5	mA mA
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CE} = rated V_{CBO}			0.1	mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	V_{CE} = rated V_{CEO}			0.1	mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			2	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 100 mA for **2N6035/2N6038** for **2N6036/2N6039**	 60 80			 V V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 2 A I_B = 8 mA I_C = 4 A I_B = 40 mA			2 3	V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 4 A I_B = 40 mA			4	V
V_{BE}*	Base-Emitter Voltage	I_C = 2 A V_{CE} = 3 V			2.8	V
h_{FE}*	DC Current Gain	I_C = 0.5 A V_{CE} = 3 V I_C = 2 A V_{CE} = 3 V I_C = 4 A V_{CE} = 3 V	500 750 100		 15000	
h_{fe}	Small Signal Current Gain	I_C = 0.75 A V_{CE} = 10 V f = 1KHz	25			
C_{CBO}	Collector Base Capacitance	I_E = 0 V_{CB} = 10 V f = 1MHz for **NPN types** for **PNP types**			 100 200	 pF pF

* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

SOT-32 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		10.8	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.04		0.106
c1		1.2			0.047	
D		15.7			0.618	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100