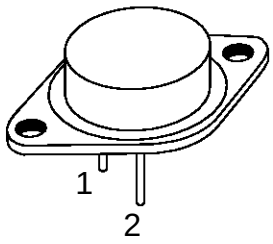
SGS-THOMSON MICROELECTRONICS

MJ11011/13/15
MJ11012/14/16

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- MJ11013, MJ11014, MJ11015 AND MJ11016 ARE SGS-THOMSON PREFERRED SALESTYPES



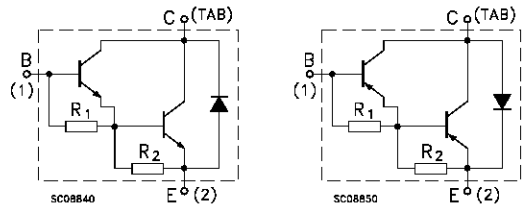
TO-3

DESCRIPTION

The MJ11012, MJ11014 and MJ11016 are silicon epitaxial-base NPN transistors in monolithic Darlington configuration and are mounted in Jedec TO-3 metal case. They are intented for general purpose and amplifier applications.

The complementary PNP types are the MJ11011, MJ11013 and MJ11015 respectively.

INTERNAL SCHEMATIC DIAGRAM



R_1 Typ. = 8 KΩ R_2 Typ. = 60 Ω

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value			Unit
		NPN	MJ11012	MJ11014	MJ11016	
		PNP	MJ11011	MJ11013	MJ11015	
V_{CEO}	Collector-Emitter Voltage (I_B = 0)		60	90	120	V
V_{CBO}	Collector-Base Voltage (I_E = 0)		60	90	120	V
V_{EBO}	Emitter-base Voltage (I_C = 0)		5			V
I_C	Collector Current		30			A
I_B	Base Current		1			A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$		200			W
T_{stg}	Storage Temperature		-65 to 200			^oC
T_j	Max. Operating Junction Temperature		200			^oC

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	0.87	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEO}	Collector Cut-off Current (I_B = 0)	V_{CE} = 50 V			1	mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			5	mA
I_{CER}	Collector Cut-off Current (R_{BE} = 1KΩ)	V_{CE} = Rated V_{CEO} T_{case} =150 ^oC V_{CE} = Rated V_{CEO}			1 5	mA mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA for **MJ11011, MJ11012** for **MJ11013, MJ11014** for **MJ11015, MJ11016**	 60 90 120			 V V V
h_{FE}*	DC Current Gain	I_C = 20 A V_{BE} = 5 V I_C = 30 A V_{BE} = 5 V	1000 200			
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 20 A I_B = 200 mA I_C = 30 A I_B = 300 mA			3 4	V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 20 A I_B = 200 mA I_C = 30 A I_B = 300 mA			3.5 5	V V
h_{fe}	Small Signal Current Gain	I_C = 10 A V_{CE} = 3 V f = 1 MHz	4			

* Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %
For PNP types voltage and current values are negative.

TO-3 (H) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		11.7			0.460	
B	0.96		1.10	0.037		0.043
C			1.70			0.066
D			8.7			0.342
E			20.0			0.787
G		10.9			0.429	
N		16.9			0.665	
P			26.2			1.031
R	3.88		4.09	0.152		0.161
U			39.50			1.555
V		30.10			1.185