SGS-THOMSON MICROELECTRONICS

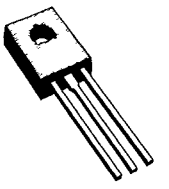
2N6034/35/36
2N6037/38/39

MEDIUM POWER DARLINGTONS

DESCRIPTION

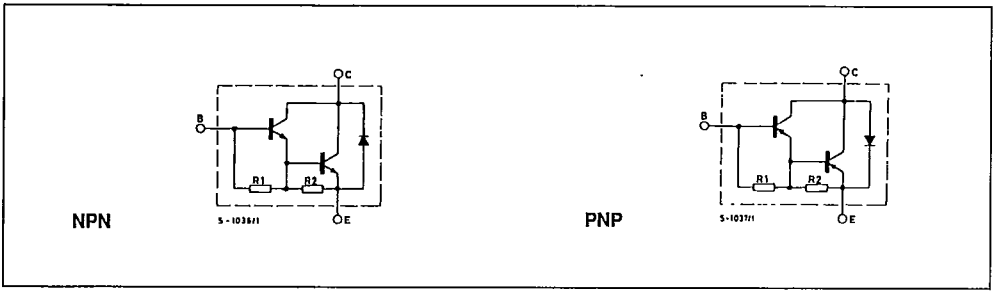
The 2N6037, 2N6038 and 2N6039 are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jedec TO-126 plastic package.

The complementary PNP types are the 2N6034, 2N6035 and 2N6036 respectively.



TO-126

INTERNAL SCHEMATIC DIAGRAMS



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	PNP / NPN	2N6034 / 2N6037	2N6035 / 2N6038	2N6036 / 2N6039	Unit
V_{CBO}	Collector-base Voltage ($I_E = 0$)		40	60	80	V
V_{CEO}	Colletor-emitter Voltage ($I_B = 0$)		40	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		100			mA
P_{tot}	Total Power Dissipation at $T_{case} \leq 25°C$		40			W
T_{stg}	Storage Temperature		– 65 to 150			°C
T_j	Junction Temperature		150			°C

THERMAL DATA

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

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

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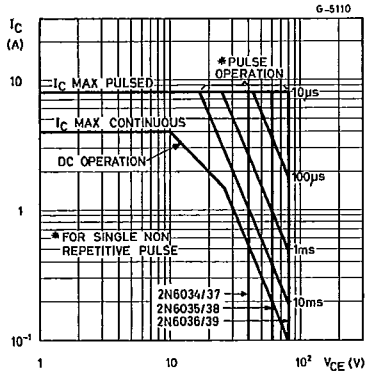
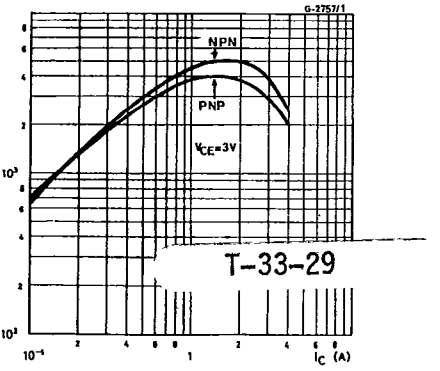
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cuttoff Current (I_E = 0)	for **2N6034/37** V_{CE} = 40V for **2N6035/38** V_{CE} = 60V for **2N6036/39** V_{CE} = 80V				100 100 100	µA µA µA
I_{CEO}	Collector Cutoff Current (I_B = 0)	for **2N6034/37** V_{CE} = 40V for **2N6035/38** V_{CE} = 60V for **2N6036/39** V_{CE} = 80V				100 100 100	µA µA µA
I_{CEX}	Collector Cutoff Current (V_{EB} = 1.5V)	for **2N6034/37** V_{CE} = 40V for **2N6035/38** V_{CE} = 60V for **2N6036/39** V_{CE} = 80V T_{case} = 125°C for **2N6034/37** V_{CE} = 40V for **2N6035/38** V_{CE} = 60V for **2N6036/39** V_{CE} = 80V				0.1 0.1 0.1 0.5 0.5 0.5	mA mA mA mA mA mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5V				2	mA
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 100mA	for **2N6034/37** for **2N6035/38** for **2N6036/39**	40 60 80			V V V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 2A I_C = 4A	I_B = 8mA I_B = 40mA			2 3	V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 4A	I_B = 40mA			4	V
V_{BE}*	Base-emitter Voltage	I_C = 2A	V_{CE} = 3V			2.8	V
h_{FE}*	DC Current Gain	I_C = 0.5A I_C = 2A I_C = 4A	V_{CE} = 3V V_{CE} = 3V V_{CE} = 3V	500 750 100		15000	
h_{fe}	Small Signal Current Gain	I_C = 0.75A f = 1MHz	V_{CE} = 10V	25			
C_{CBO}	Collector-base Capacitance	V_{CB} = 10V f = 1MHz	I_E = 0			(•)100	

* Pulsed : pulse duration = 300µs, duty cycle ≤ 1.5%.
(•) for PNP types 200pF.

Safe Operating Areas.



DC Current Gain.



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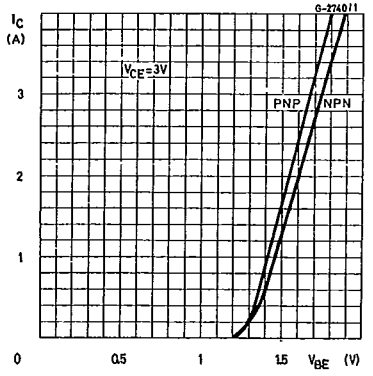
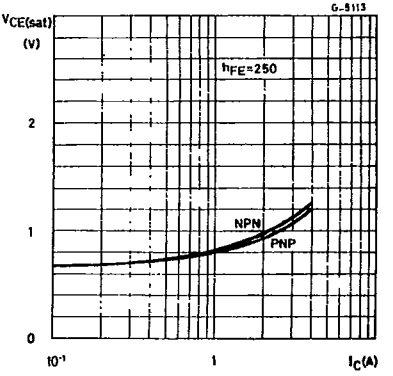
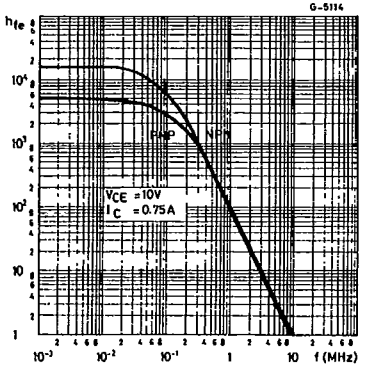
DC Transconductance



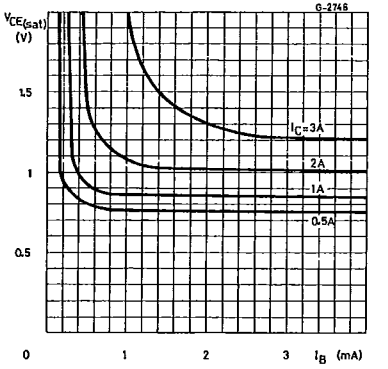
Collector-emitter Saturation Vol-



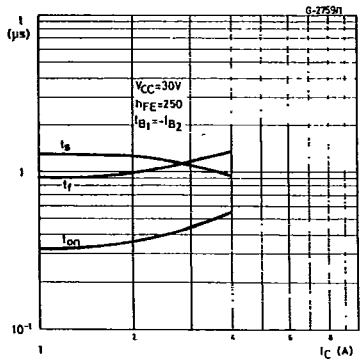
Small Signal Current Gain.



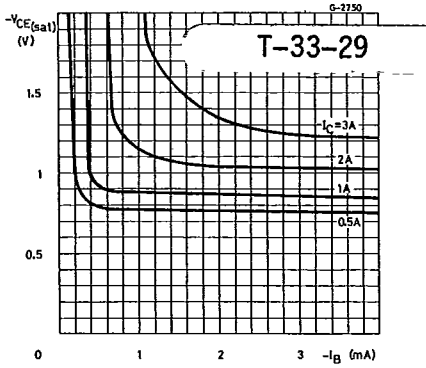
Collector-emitter Saturation Voltage (NPN).



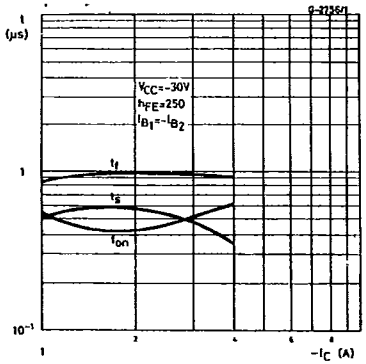
Saturated Switching Characteristics (NPN).



Collector-emitter Saturation Voltage (PNP).



Saturated Switching Characteristics (PNP).



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