SGS-THOMSON MICROELECTRONICS

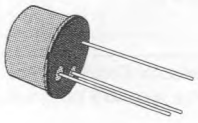
2N5336/5337 2N5338/5339

HIGH CURRENT FAST SWITCHING APPLICATION

DESCRIPTION

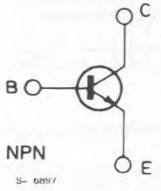
The 2N5336, 2N5337, 2N5338 and 2N5339 are silicon epitaxial planar NPN transistors in Jedec TO-39 metal case.

They are intended for high current switching applications up to 5A.



TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOTUTE MAXIMUM RATINGS

Symbol	Parameter	2N5336 2N5337	2N5338 2N5339	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	80	100	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	80	100	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	6		V
I_C	Collector Current	5		A
I_{CM}	Collector Peak Current	7		A
I_B	Base Current	1		A
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C $T_{case} \leq 25$ °C	1 6		W W
T_{stg}	Storage Temperature	– 65 to 200		°C
T_j	Junction Temperature	200		°C

THERMAL DATA

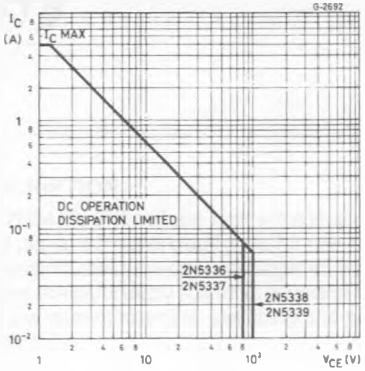
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	29.2	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	175	°C/W

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

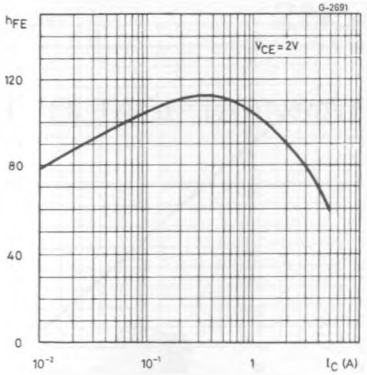
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	for **2N5336** and **2N5337** V_{CB} = 80 V for **2N5338** and **2N5339** V_{CB} = 100 V			10 10	µA µA
I_{CEO}	Collector Cutoff Current (I_B = 0)	for **2N5336** and **2N5337** V_{CE} = **75** V for **2N5338** and **2N5339** V_{CE} = 90 V			100 100	µA µA
I_{CEX}	Collector Cutoff Current (V_{BE} = – 1.5 V)	for **2N5336** and **2N5337** V_{CE} = 75 V V_{CE} = **75** V T_{case} = 150 °C for **2N5338** and **2N5339** V_{CE} = 90 V V_{CE} = 90 V T_{case} = 150 °C			10 1 10 1	µA mA µA mA
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 50 mA for **2N5336** and **2N5337** for **2N5338** and **2N5339**	80 100			V V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 2 A I_B = 0.2 A I_C = 5 A I_B = 0.5 A			0.7 1.2	V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 2 A I_B = 0.2 A I_C = 5 A I_B = 0.5 A			1.2 1.8	V V
h_{FE}*	DC Current Gain	I_C = 0.5 A V_{CE} = 2 V for **2N5336** and **2N5337** for **2N5338** and **2N5339** I_C = 2 A V_{CE} = 2 V for **2N5336** and **2N5337** for **2N5338** and **2N5339** I_C = 5 A V_{CE} = 2 V for **2N5336** and **2N5337** for **2N5338** and **2N5339**	30 60 30 60 20 40		120 240	
f_T	Transition Frequency	I_C = 0.5 A V_{CE} = 10 V	30			MHz
C_{CBO}	Collector-base Capacitance	V_{CB} = 10 V I_E = 0 f = 0.1 MHz			250	pF
t_{on}	Turn-on Time	I_C = 2 A V_{CC} = 40 V I_{B1} = 0.2 A			200	ns
t_s	Storage Time	I_C = 2 A V_{CC} = 40 V I_{B1} = – I_{B2} = 0.2 A			2	µs
t_f	Fall Time				200	ns

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

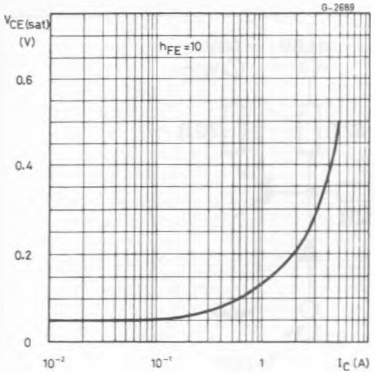
Safe Operating Areas.



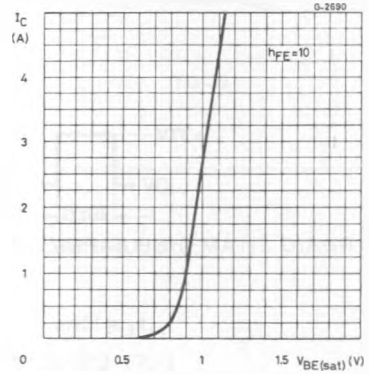
DC Current Gain.



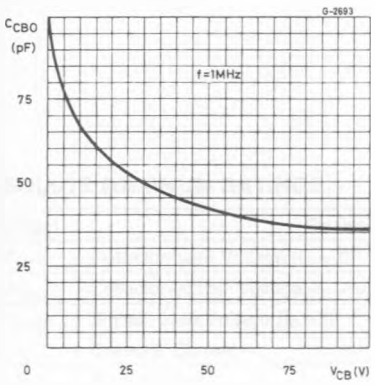
Collector-emitter Saturation Voltage.



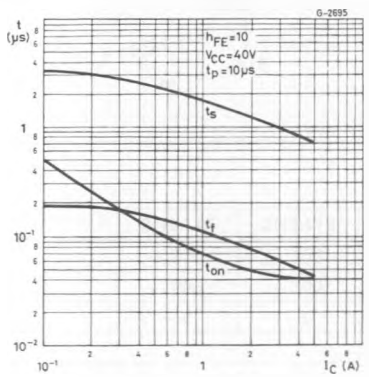
Base-emitter Saturation Voltage.



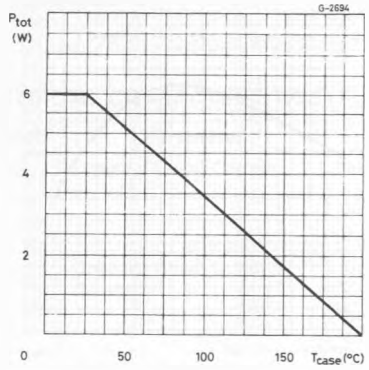
Collector-base Capacitance.



Saturated Switching Characteristics.



Power Rating Chart.



Switching Time Test Circuit.