



### 2STF2360 Low voltage fast-switching PNP power transistors

#### Features

- Very low collector-emitter saturation voltage
- High current gain characteristic
- Fast-switching speed

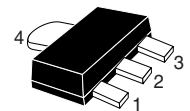
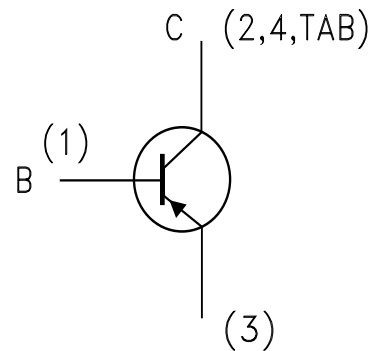
#### Applications

- Emergency lighting
- LED
- Voltage regulation
- Relay drive

#### Description

The devices are PNP transistors manufactured using new “PB-HDC” (power bipolar high density current) technology. The resulting transistor shows exceptional high gain performances coupled with very low saturation voltage.

Marking : 2360



SOT-89-3L

#### Absolute maximum ratings

Symbol	Parameter	Value			Unit
$V_{CBO}$	Collector-base voltage ( $I_E = 0$ )	-60			V
$V_{CEO}$	Collector-emitter voltage ( $I_B = 0$ )	-60			V
$V_{EBO}$	Emitter-base voltage ( $I_C = 0$ )	-6			V
$I_C$	Collector current	-3			A
$I_{CM}$	Collector peak current ( $t_p < 5$ ms)	-5			A
$I_B$	Base current	-0.2			A
$I_{BM}$	Base peak current ( $t_p < 5$ ms)	-0.4			A
$P_{TOT}$	Total dissipation at $T_{amb} = 25$ °C	15	1.4	1.6	W
$T_{stg}$	Storage temperature	-65 to 150			°C
$T_J$	Max. operating junction temperature	150			°C

#### Thermal data

Symbol	Parameter		DPAK	SOT-89	SOT-223	Unit
$R_{thJA}^{(1)}$	Thermal resistance junction-ambient	Max	8.3	89	78	°C/W

1. Device mounted on a PCB area of 1 cm<sup>2</sup>



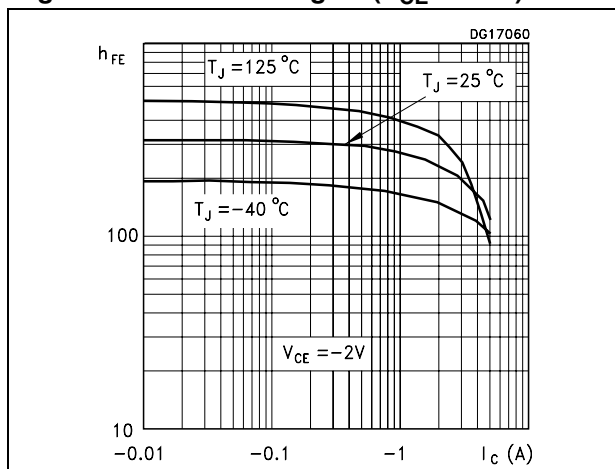
$T_{CASE} = 25^{\circ}C$ ; unless otherwise specified.

**Table 4. Electrical characteristics**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector cut-off current ( $I_E = 0$ )	$V_{CB} = -60 V$			-100	nA
$I_{EBO}$	Emitter cut-off current ( $I_C = 0$ )	$V_{EB} = -6 V$			-100	nA
$V_{BE(on)}$	Base-emitter on voltage	$V_{CE} = -2 V$ $I_C = -100 mA$	-630	-650	-730	mV
$V_{CE(sat)}^{(1)}$	Collector-emitter saturation voltage	$I_C = -2 A$ $I_B = -100 mA$		-200	-320	mV
		$I_C = -3 A$ $I_B = -150 mA$		-300	-500	mV
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = -2 A$ $I_B = -100 mA$		-0.9	-1.2	V
$h_{FE}^{(1)}$	DC current gain	$I_C = -100 mA$ $V_{CE} = -2 V$	80			
		$I_C = -1 A$ $V_{CE} = -2 V$	160		400	
$t_d$ $t_r$ $t_s$ $t_f$	Resistive load	$I_C = -3 A$ $V_{CC} = -10 V$ $I_{B(on)} = -I_{B(off)} = -300 mA$ $V_{BE(off)} = 5 V$				
	Delay time			10	15	ns
	Rise time			75	100	ns
	Storage time			250	350	ns
	Fall time		35	50	ns	
$f_T$	Transition frequency	$I_C = -0.1 A$ $V_{CE} = -10 V$		130		MHz

1. Pulse test: pulse duration  $\leq 300 \mu s$ , duty cycle  $\leq 2\%$

**Figure 2. DC current gain ( $V_{CE} = -2 V$ )**



**Figure 3. DC current gain ( $V_{CE} = -5 V$ )**

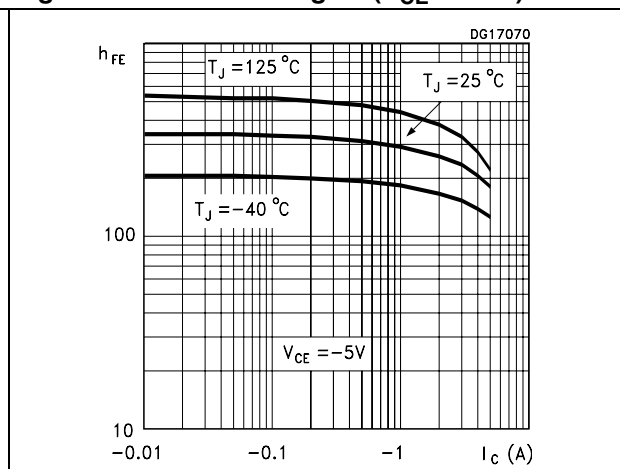




Figure 4. Collector emitter saturation voltage Figure 5. Base emitter saturation voltage

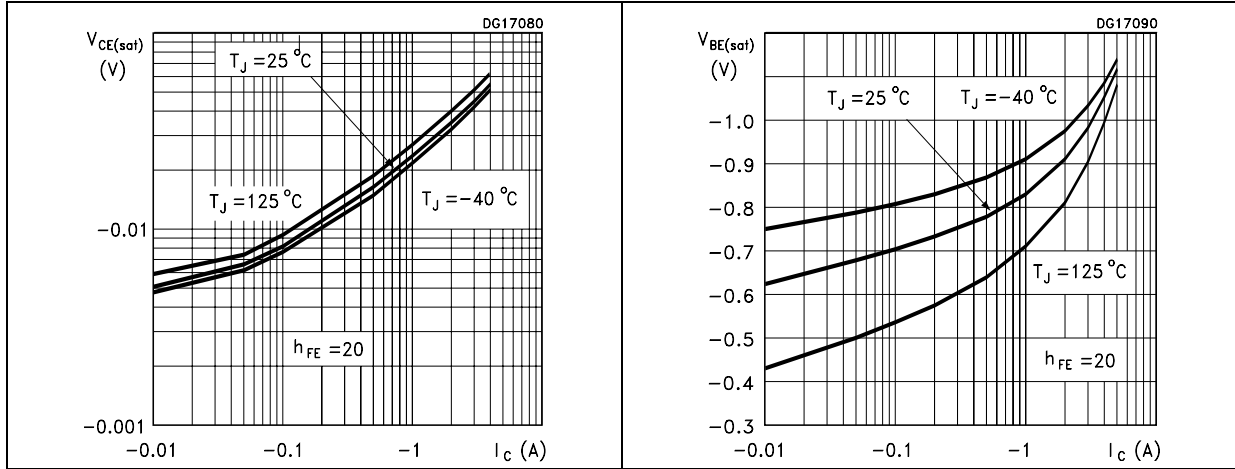


Figure 6. Resistive load switching on Figure 7. Resistive load switching off

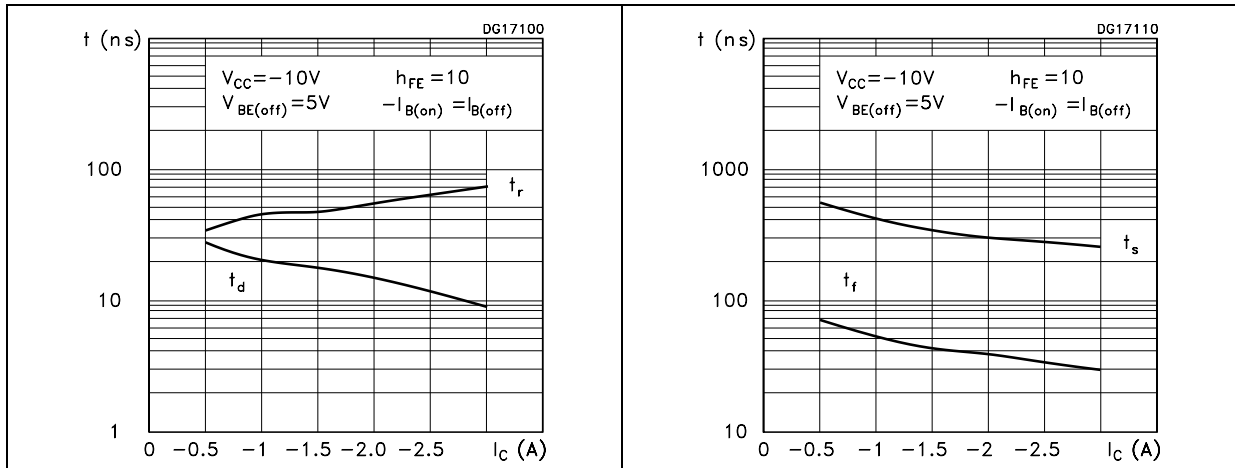


Figure 8. Capacitances

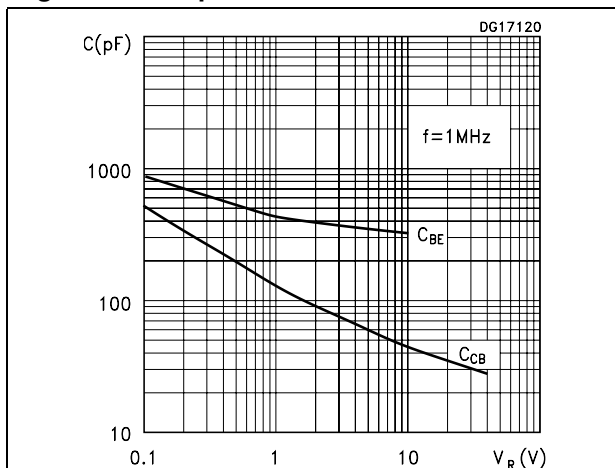
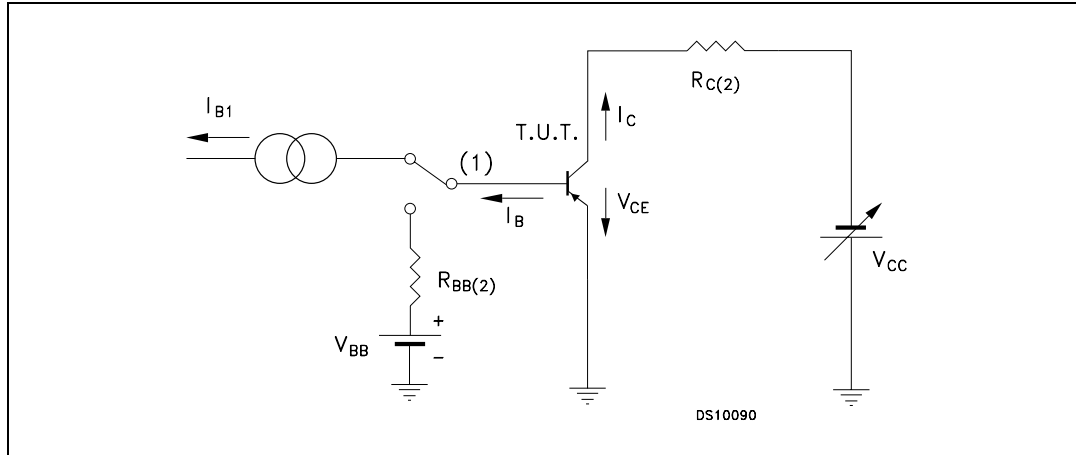




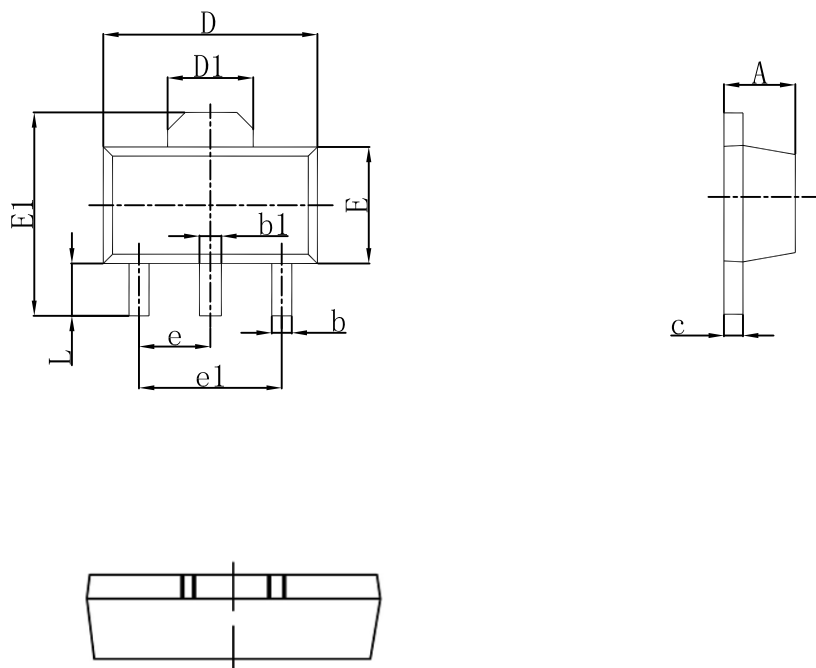
Figure 9. Resistive load switching



1. Fast electronic switch
2. Non-inductive resistor



### SOT-89-3L Outlines Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047