



# STX112

## SILICON NPN POWER DARLINGTON TRANSISTOR

- MONOLITHIC DARLINGTON CONFIGURATION
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE

### APPLICATIONS

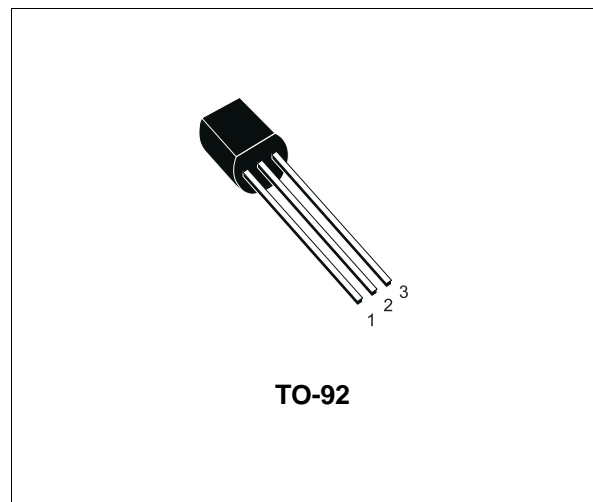
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

### DESCRIPTION

The device is a silicon Epitaxial-Base NPN transistor in monolithic Darlington configuration mounted in TO-92 plastic package. It is intended for use in linear and switching applications.

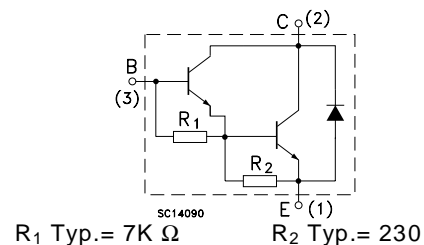
Ordering codes:

STX112 (shipment in bulk)  
STX112-AP (shipment in ammpack)



TO-92

### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	100	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	100	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	5	V
$I_C$	Collector Current	2	A
$I_{CM}$	Collector Peak Current	4	A
$I_B$	Base Current	50	mA
$P_{tot}$	Total Dissipation at $T_{amb} = 25\text{ °C}$	1.2	W
$T_{stg}$	Storage Temperature	-65 to 150	°C
$T_j$	Max. Operating Junction Temperature	150	°C

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## THERMAL DATA

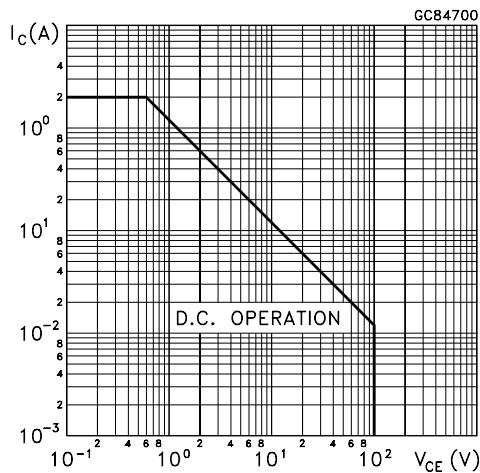
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	104	$^{\circ}\text{C}/\text{W}$
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## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

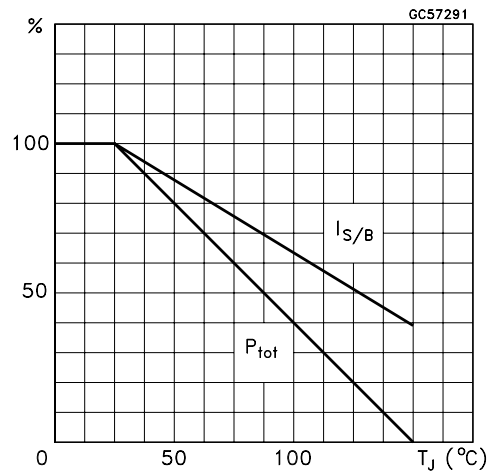
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	$V_{CE} = 50\text{ V}$			2	mA
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	$V_{CB} = 100\text{ V}$			1	mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5\text{ V}$			2	mA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 30\text{ mA}$	100			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 2\text{ A}$ $I_B = 8\text{ mA}$			2.5	V
$V_{BE}^*$	Base-Emitter Voltage	$I_C = 2\text{ A}$ $V_{CE} = 4\text{ V}$			2.8	V
$h_{FE}^*$	DC Current Gain	$I_C = 1\text{ A}$ $V_{CE} = 4\text{ V}$ $I_C = 2\text{ A}$ $V_{CE} = 4\text{ V}$	1000 500			

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle 1.5 %

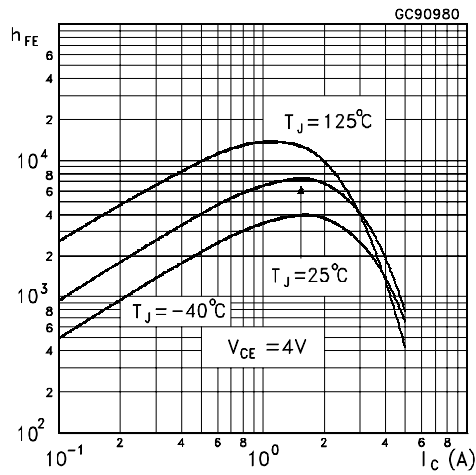
Safe Operating Area



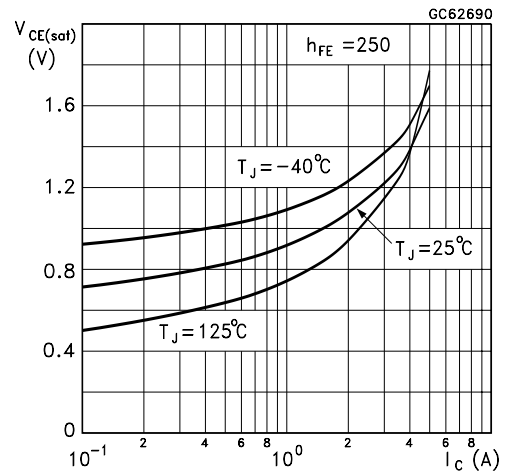
Derating Curve



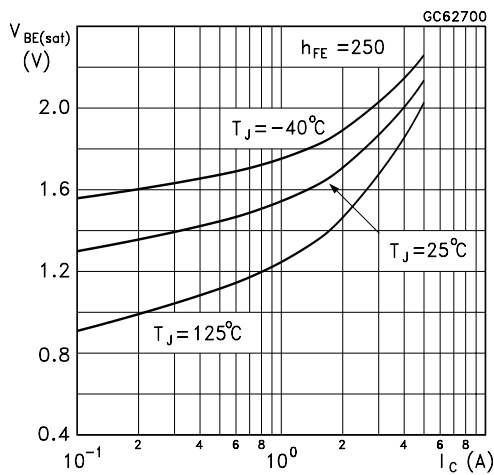
DC Current Gain



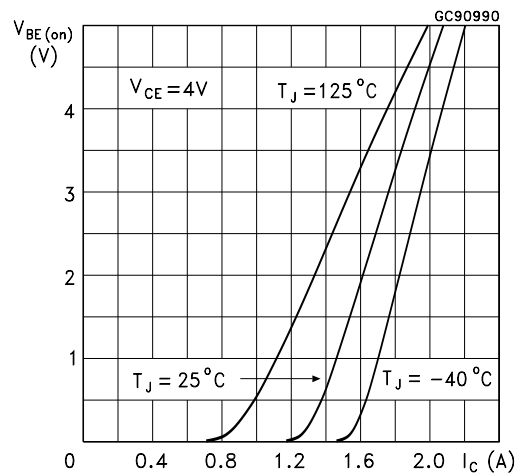
Collector-Emitter Saturation Voltage



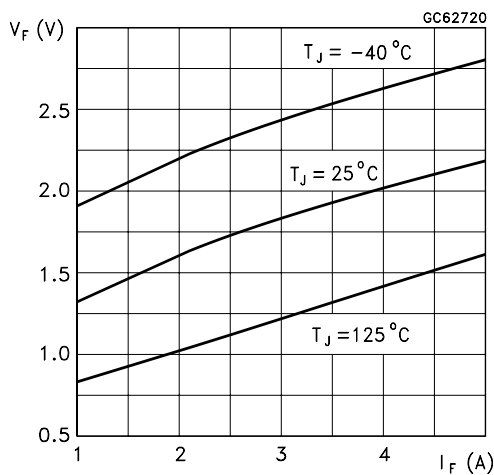
Base-Emitter Saturation Voltage



Base-Emitter On Voltage

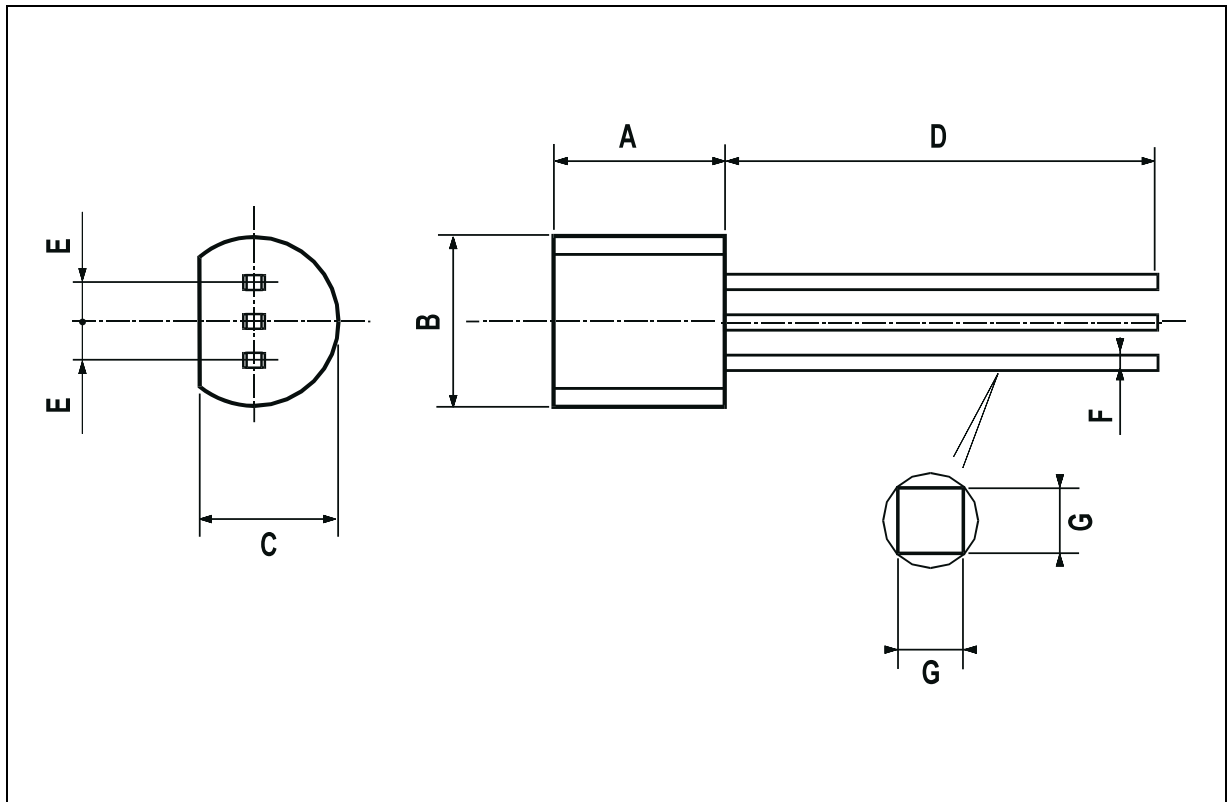


Freewheel Diode Forward Voltage



**TO-92 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.58		5.33	0.180		0.210
B	4.45		5.2	0.175		0.204
C	3.2		4.2	0.126		0.165
D	12.7			0.500		
E		1.27			0.050	
F	0.4		0.51	0.016		0.020
G	0.35			0.14		



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