

Low voltage power Darlington transistor

Features

- Low base drive requirements
- Integrated antiparallel collector-emitter diode
- Through hole TO-251 (IPAK) power package in tube (suffix "-1")
- Surface mounting TO-252 (DPAK) power package in tape & reel (suffix "T4")

Applications

- General purpose switching and amplifier

Description

The device is manufactured using Epitaxial-base technology for high performance. PNP type is MJD127.

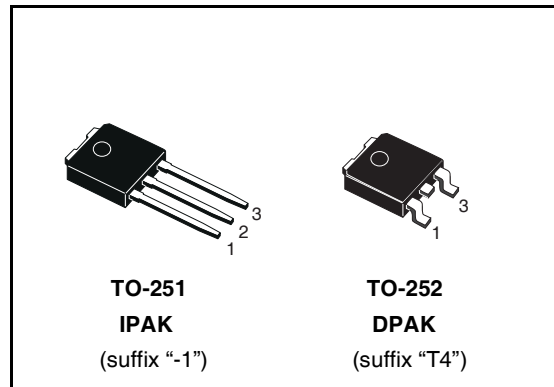


Figure 1. Internal schematic diagram

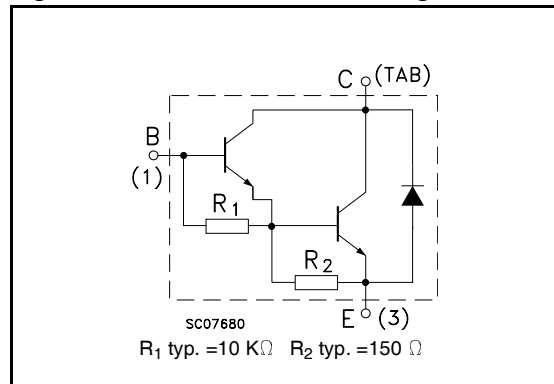


Table 1. Device summary

Order code	Marking	Package	Packaging
MJD122T4	MJD122	TO-252 (DPAK)	Tape & reel
MJD122-1	MJD122	TO-251 (IPAK)	Tube

1 Electrical ratings

Table 2. Absolute maximum rating

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage ($I_E = 0$)	100	V
V_{CEO}	Collector-base voltage ($I_B = 0$)	100	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	5	V
I_C	Collector current	8	A
I_{CM}	Collector peak current	16	A
I_B	Base current	0.12	A
P_{TOT}	Total dissipation at $T_{case} = 25^\circ\text{C}$	20	W
	Total dissipation at $T_{amb} = 25^\circ\text{C}$	1.75	W
T_{stg}	Storage temperature	-65 to 150	$^\circ\text{C}$
T_J	Max. operating junction temperature	150	$^\circ\text{C}$

2 Electrical characteristics

($T_{case} = 25^{\circ}C$ unless otherwise specified)

Table 3. Electrical characteristics

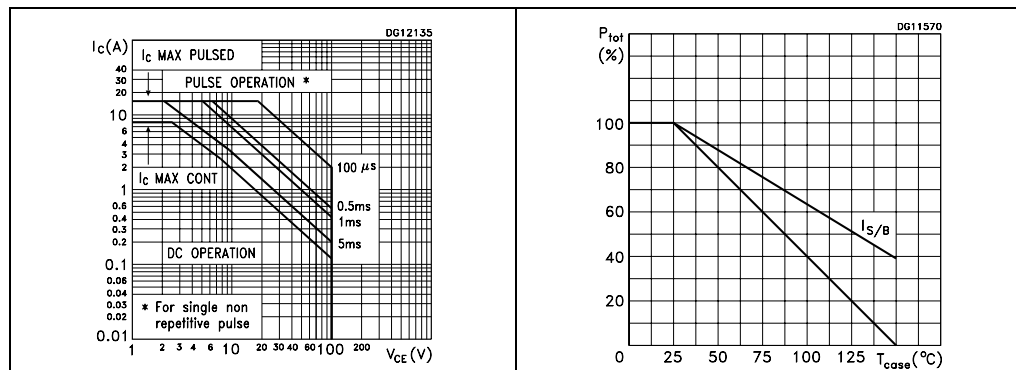
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current ($I_E = 0$)	$V_{CB} = 100\text{ V}$			10	μA
I_{CEO}	Collector cut-off current ($I_B = 0$)	$V_{CE} = 50\text{ V}$			10	μA
I_{EBO}	Emitter cut-off current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			2	mA
$V_{CEO(sus)}^{(1)}$	Collector-emitter sustaining voltage ($I_B = 0$)	$I_C = 30\text{ mA}$	100			V
$V_{CE(sat)}^{(1)}$	Collector-emitter saturation voltage	$I_C = 4\text{ A}$ $I_B = 16\text{ mA}$			2	V
		$I_C = 8\text{ A}$ $I_B = 80\text{ mA}$			4	V
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = 8\text{ A}$ $I_B = 80\text{ mA}$			4.5	V
$V_{BE(on)}^{(1)}$	Base-emitter on voltage	$I_C = 4\text{ A}$ $V_{CE} = 4\text{ V}$			2.8	V
h_{FE}	DC current gain	$I_C = 4\text{ A}$ $V_{CE} = 4\text{ V}$	1000		12000	
		$I_C = 8\text{ A}$ $V_{CE} = 4\text{ V}$	100			

Note (1) Pulsed duration = 300 μs , duty cycle $\leq 1.5\%$

2.1 Electrical characteristic (curves)

Figure 2. Safe operating area

Figure 3. Derating curve

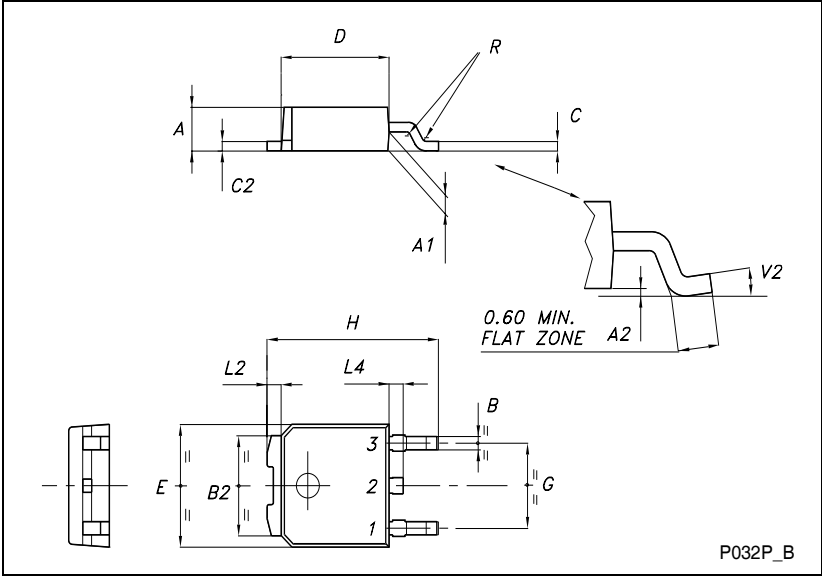


3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark.

TO-252 (DPAK) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.20		2.40	0.087		0.094
A1	0.90		1.10	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.213
C	0.45		0.60	0.018		0.024
C2	0.48		0.60	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.60	0.252		0.260
G	4.40		4.60	0.173		0.181
H	9.35		10.10	0.368		0.398
L2		0.8			0.031	
L4	0.60		1.00	0.024		0.039
V2	0°		8°	0°		0°



P032P_B