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2N3773

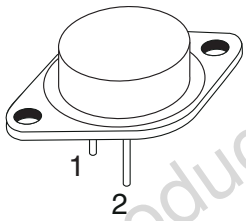
High power NPN transistor

Features

- High power dissipation
- Low collector-emitter saturation voltage

Description

The device is a planar NPN transistor mounted in TO-3 metal case. It is intended for linear amplifiers and inductive switching applications.



TO-3

Figure 1. Internal schematic diagram

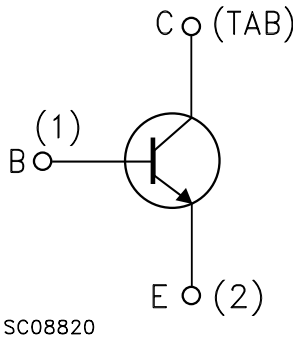


Table 1. Device summary

Order code	Marking	Package	Packaging
2N3773	2N3773	TO-3	Tray

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-emitter voltage (I_B = 0)	140	V
V_{CEV}	Collector-emitter voltage (V_{BE} = -1.5 V)	160	V
V_{CBO}	Collector-base voltage (I_E = 0)	160	V
V_{EBO}	Emitter-base voltage (I_C = 0)	7	V
I_C	Collector current	16	A
I_{CM}	Collector peak current (t_P < 5 ms)	30	A
I_B	Base current	4	A
I_{BM}	Base peak current (t_P < 1 ms)	15	A
P_{tot}	Total dissipation at $T_c \leq 25$ °C	150	W
T_{stg}	Storage temperature	-65 to 200	°C
T_j	Max. operating junction temperature	200	°C

Table 3. Thermal data

Symbol	Parameter		Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case	Max	1.17	°C/W

2 Electrical characteristics

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

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector cut-off current (V_{BE} = -1.5 V)	V_{CE} = 140 V V_{CE} = 140 V T_C = 150 °C			2 10	mA mA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CE} = 120 V			10	mA
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = 140 V			2	mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 7 V			5	mA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = 0.2 A	140			V
$V_{CEV(sus)}$ (1)	Collector-emitter sustaining voltage (V_{BE} = -1.5 V)	I_C = 0.1 A	160			V
$V_{CER(sus)}$ (1)	Collector-emitter sustaining voltage (R_{BE} = 100 Ω)	I_C = 0.2 A	150			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 8 A I_B = 0.8 A I_C = 16 A I_B = 3.2 A			1.4 4	V V
V_{BE} (1)	Base-emitter voltage	I_C = 8 A V_{CE} = 4 V			2.2	V
h_{FE} (1)	DC current gain	I_C = 8 A V_{CE} = 4 V I_C = 16 A V_{CE} = 4 V	15 5		60	
$I_{s/b}$	Second Breakdown Collector Current	V_{CE} = 30 V t = 1 s (non repetitive)	5			A

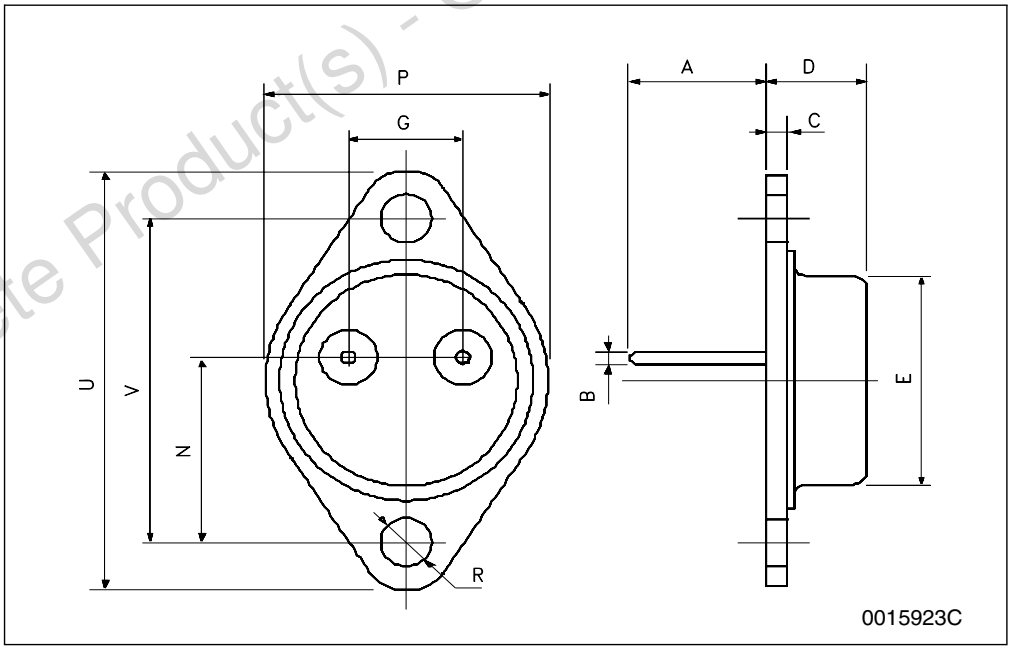
1. Pulsed: Pulse duration = 300 µs, duty cycle ≤ 2 %

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. ECOPACK specifications are available at: www.st.com

TO-3 mechanical data

DIM.	mm.		
	min.	typ	max.
A	11.00		13.10
B	0.97		1.15
C	1.50		1.65
D	8.32		8.92
E	19.00		20.00
G	10.70		11.10
N	16.50		17.20
P	25.00		26.00
R	4.00		4.09
U	38.50		39.30
V	30.00		30.30



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
03-Apr-2006	1	Initial release.
10-Oct-2008	2	Content reworked to improve readability, no technical changes.

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