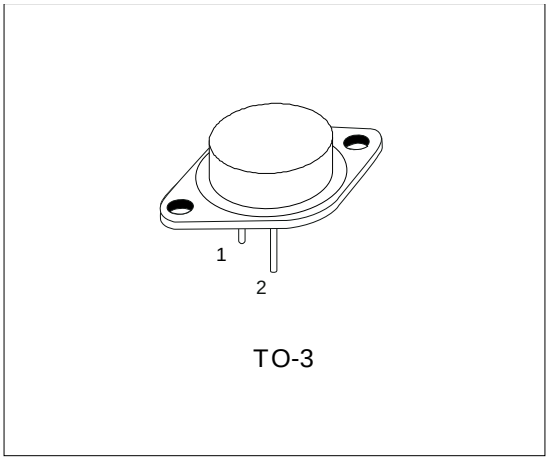
2N6547

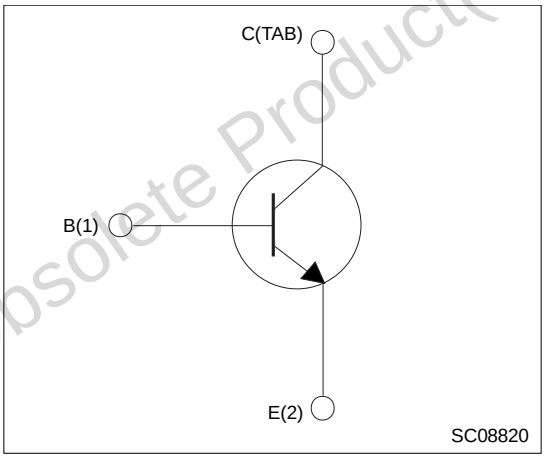
High voltage fast-switching NPN power transistor

Datasheet - production data



TO-3

Figure 1: Internal schematic diagram



Features

- NPN transistor
- High voltage capability
- High current capability
- Fast switching speed

Applications

- Switched mode power supplies
- Flyback and forward single transistor low power converters

Description

The 2N6547 is a high voltage Multiepitaxial Mesa NPN transistor mounted in a TO-3 metal case. It is particularly suited for switching and industrial applications from single and three-phase mains.

Table 1: Device summary

Order code	Marking	Packages	Packaging
2N6547	2N6547	TO-3	Bag

Contents

1 Electrical ratings

Table 2: Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CER}	Collector-emitter voltage (R_{BE} = 50 Ω)	850	V
V_{CES}	Collector-emitter voltage (V_{BE} = 0)	850	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	400	V
V_{EBO}	Emitter-base voltage (I_C = 0)	9	V
I_C	Collector current	15	A
I_{CM}	Collector peak current	30	A
I_B	Base current	10	A
I_{BM}	Base peak current	20	A
P_{TOT}	Total dissipation at Tc = 25 °C	175	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	°C/W

2 Electrical characteristics

Table 4: Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cut-off current (V_{BE} = 0)	V_{CE} = 850 V			1	mA
		V_{CE} = 850 V, Tc = 100 °C			4	mA
I_{CER}	Collector cut-off current (R_{BE} = 10 Ω)	V_{CE} = 850 V, Tc = 100 °C			5	mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 9 V			1	mA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = 100 mA	400			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 10 A, I_B = 2 A			1.5	V
		I_C = 15 A, I_B = 3 A			5	V
		I_C = 10 A, I_B = 2 A, Tc = 100 °C			2.5	V
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 10 A, I_B = 2 A			1.6	V
		I_C = 10 A, I_B = 2 A, Tc = 100 °C			1.6	V
h_{FE} (1)	DC current gain	I_C = 5 A, V_{CE} = 2 V	12		30	
		I_C = 10 A, V_{CE} = 2 V	6			
f_T (1)	Transition frequency	I_C = 0.5 A, V_{CE} = 10 V, f = 1 MHz		3		MHz
C_{CBO}	Collector-base capacitance (I_E=0)	V_{CB} = 10 V, f = 1 MHz			360	pF

Notes:

(1)Pulse test: pulse duration ≤ 300 µs, duty cycle ≤ 2%

Table 5: Resistive load

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
t_{on}	Turn-on time	V_{CC} = 250 V, I_C = 10 A I_{B1} = - I_{B2} = 2 A, T_p ≥ 25 µs	-	-	1	µs
t_s	Storage time		-	-	4	µs
t_f	Fall time		-	-	0.7	µs

Table 6: Inductive load

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
t_s	Storage time	V_{CL} = 450 V, I_C = 10 A, L_C = 180 mH, I_{B1} = 2 A, V_{BE} = -5 V, Tc = 100 °C	-	-	5	µs
t_f	Fall time		-	-	1.5	µs

3 Package information

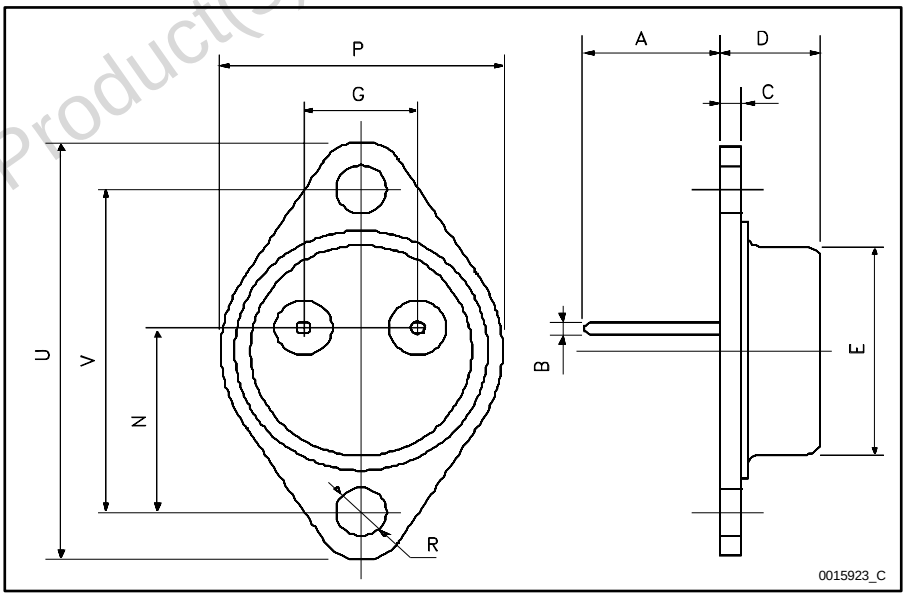
In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: ***www.st.com***. ECOPACK® is an ST trademark.

3.1 TO-3 mechanical data

Table 7: 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

Figure 2: TO-3 mechanical data drawing



4 Revision history

Table 8: Revision history

Date	Revision	Changes
12-Dec-2012	3	Changed F_T value in electrical characteristics table.

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