2N6546
2N6547

MULTIEPITAXIAL MESA NPN

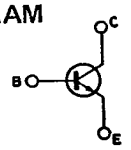
HIGH VOLTAGE, HIGH CURRENT POWER SWITCH

The 2N6546 and 2N6547 are multiepitaxial mesa NPN transistors in Jedec TO-3 metal case, intended in fast switching applications for high output power.

ABSOLUTE MAXIMUM RATINGS

		2N6546	2N6547
V_{CES}	Collector-emitter voltage (V_{BE} = 0)	650V	850V
V_{CEX}	(Clamped) Collector-emitter voltage (V_{BE} = −5V)	350V	450V
V_{CEO}	Collector-emitter voltage (I_B = 0)	300V	400V
V_{EBO}	Emitter-base voltage (I_C = 0)	9V	
I_C	Collector current	15A	
I_{CM}	Collector peak current	30A	
I_B	Base current	10A	
P_{tot}	Total power dissipation at $T_{case} \leq 25°C$	175W	
T_{stg}	Storage temperature	−65 to 200°C	
T_j	Junction temperature	200°C	

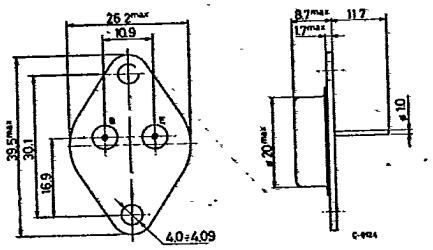
INTERNAL SCHEMATIC DIAGRAM



MECHANICAL DATA

Dimensions in mm

Collector connected to case



TO-3

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THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max. 1	°C/W

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

Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cutoff current (V_{BE} = 0)	for **2N6546** V_{CE} = 650V			1	mA
		for **2N6547** V_{CE} = 850V			1	mA
		T_{case} = 100°C				
		for **2N6546** V_{CE} = 650V			4	mA
		for **2N6547** V_{CE} = 850V			4	mA
I_{CER}	Collector cutoff current (R_{BE} = 50Ω)	T_{case} = 100°C				
		for **2N6546** V_{CE} = 650V			5	mA
		for **2N6547** V_{CE} = 850V			5	mA
I_{EBO}	Emitter cutoff current (I_C = 0)	V_{EB} = 9V			1	mA
$V_{CEO\ (sus)}$*	Collector-emitter sustaining voltage (I_B = 0)	I_C = 100mA				
		for **2N6546**	300			V
		for **2N6547**	400			V
$V_{CEX\ (sus)}$*	Collector-emitter sustaining voltage (clamped $E_{S/B}$)	I_C/I_B = 5				
		L = 180μH				
		V_{BE} = −5V				
		T_{case} = 100°C				
		V_{clamp} = rated $V_{CEX\ (sus)}$				
		I_C = 8A				
		for **2N6546**	350			V
		for **2N6547**	450			V
		V_{clamp} = rated $V_{CEO\ (sus)}$−100V				
		I_C = 15A				
		for **2N6546**	200			V
		for **2N6547**	300			V
$I_{s/b}$	Second breakdown collector current	t = 1 s (non repetitive)				
		V_{CE} = 100V	0.2			A
$E_{s/b}$	Second breakdown energy	L = 40μH		2		mJ
		V_{BE} = −4V				
		R_{BE} = 50Ω				

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ELECTRICAL CHARACTERISTICS (continued)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
h_{FE}*	DC current gain	$I_C = 5A$ $V_{CE} = 2V$	12		60	—
		$I_C = 10A$ $V_{CE} = 2V$	6		30	—
$V_{CE\ (sat)}$*	Collector-emitter saturation voltage	$I_C = 10A$ $I_B = 2A$			1.5	V
		$I_C = 15A$ $I_B = 3A$			5	V
		$T_{case} = 100°C$ $I_C = 10A$ $I_B = 2A$			2.5	V
$V_{BE\ (sat)}$*	Base-emitter saturation voltage	$I_C = 10A$ $I_B = 2A$			1.6	V
		$T_{case} = 100°C$ $I_C = 10A$ $I_B = 2A$			1.6	V
f_T	Transition frequency	$I_C = 0.5A$ $V_{CE} = 10V$ $f = 1MHz$	6		24	MHz
C_{CBO}	Collector-base capacitance	$V_{CB} = 10V$ $I_E = 0$ $f = 1MHz$			360	pF
t_{on}	Turn-on time	**RESISTIVE LOAD**			1	μs
t_s	Storage time	$V_{CC} = 250V$ $I_C = 10A$ $I_{B1} = -I_{B2} = 2A$			4	μs
t_f	Fall time				0.7	μs
t_s	Storage time	**INDUCTIVE LOAD** $I_C = 10A$ (pk) $I_{B1} = 2A$ $V_{BE} = -5V$ $L = 180\mu H$			5	μs
t_f	Fall time	$T_{case} = 100°C$ for **2N6546** $V_{clamp} = 350V$ for **2N6547** $V_{clamp} = 450V$			1.5	μs

* Pulsed: pulse duration = 300μs, duty cycle = 1.5%.

For characteristic curves see the BUW 45 type.