

POWER TRANSISTORS

20 Amp, 150 V, Double Diffused NPN Mesa

2N6354
 2N6496

FEATURES

- Collector-Base Voltage: up to 150V
- Peak Collector Current: 30A
- Rise Time: $\leq 500\text{ns}$ } @ I_C up to 12A
- Fall Time: $\leq 500\text{ns}$ }

DESCRIPTION

These double diffused glass passivated mesa power transistors combine fast-switching, low saturation voltage and rugged $E_{s/b}$ capability. They are designed for use in switching regulators, converters, inverters and switching-control amplifiers.

ABSOLUTE MAXIMUM RATINGS*

	2N6354	2N6496
Collector-Base Voltage, V_{CBO}	150V	150V
Collector-Emitter Sustaining Voltage, $V_{CER(SUS)}$ (1)	—	130V
	120V	110V
Emitter-Base Voltage, V_{EBO}	6.5V	7V
Collector Current, I_C continuous	10A	15A
Collector Current, I_{CM} peak	12A	—
Base Current, I_B continuous	5A	5A
Power Dissipation, 25°C Case	140W	140W
Operating and Storage Temperature Range	-65 to 200°C	

(1) With $R_{\theta c} \leq 50\Omega$

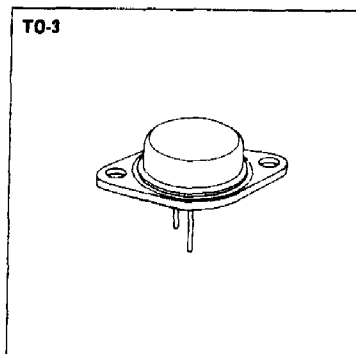
* JEDEC registered values.

MECHANICAL SPECIFICATIONS

NOTE:
 Leads may be soldered to within $\frac{1}{16}$ " of base provided temperature-time exposure is less than 260°C for 10 seconds.

2N6354, 2N6496

	ins.	mm.
A	.875 MAX.	22.23 MAX.
B	.135 MAX.	3.43 MAX.
C	.250-.450	6.35-11.43
D	.312 MIN.	7.92 MIN.
E	.038-.043 DIA.	0.97-1.09 DIA.
F	.188 MAX. RAD.	4.78 MAX. RAD.
G	1.177-1.197	29.90-30.40
H	.655-.675	16.64-17.15
J	.205-.225	5.21-5.72
K	.420-.440	10.67-11.18
L	.525 MAX. RAD.	13.34 MAX. RAD.
M	.151-.161 DIA.	3.84-4.09 DIA.



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Quality Semi-Conductors

Electrical Specifications (at 25°C unless noted)

Test	Symbol	2N6354		2N6496		Units	Test Conditions
		MIN.	MAX.	MIN.	MAX.		
D.C. Current Gain (Note 1)	h_{FE}	—	—	—	—		$I_C = 2A, V_{CE} = 5V$ $I_C = 5A, V_{CE} = 2V$
D.C. Current Gain (Note 1)	h_{FE}	—	—	12	100		$I_C = 8A, V_{CE} = 2V$ $I_C = 10A, V_{CE} = 2V$
D.C. Current Gain (Note 1)	h_{FE}	—	—	—	—		$I_C = 10A, V_{CE} = 5V$ $I_C = 12A, V_{CE} = 5V$
Collector Saturation Voltage (Note 1)	$V_{CE(sat)}$	—	0.5	—	—	V	$I_C = 5A, I_B = .5A$ $I_C = 8A, I_B = .8A$
Collector Saturation Voltage (Note 1)	$V_{CE(sat)}$	—	1.0	—	—	V	$I_C = 10A, I_B = 1.0A$
Collector Saturation Voltage (Note 1)	$V_{CE(sat)}$	—	—	—	—	V	$I_C = 12A, I_B = 1.2A$ $I_C = 20A, I_B = 5A$
Base Saturation Voltage (Note 1)	$V_{BE(sat)}$	—	1.3*	—	—	V	$I_C = 5A, I_B = 0.5A$ $I_C = 8A, I_B = 0.8A$
Base Saturation Voltage (Note 1)	$V_{BE(sat)}$	—	2.0	—	—	V	$I_C = 10A, I_B = 1A$ $I_C = 20A, I_B = 5A$
Collector-Emitter Sustaining Voltage (Note 2)	$V_{CEO(sus)}$	120	—	100	—	V	$I_C = 0.2A$
Collector-Emitter Sustaining Voltage (Note 2)	$V_{CEX(sus)}$	—	—	—	—	V	$I_C = 0.2A$ $V_{BE} = -1.5V$ $I_B = 0$ $R_{BE} = 100 \Omega$
Collector-Emitter Sustaining Voltage (Note 2)	$V_{CER(sus)}$	—	—	130	—	V	$R_{BE} = 50 \Omega, I_C = 0.2A$ $R_{BE} = 100 \Omega, I_C = 0.2A$
Emitter-Base Voltage	V_{EBO}	6.5	—	—	—	V	$I_E = 5mA$ $I_E = 50mA$
Collector Cutoff Current	I_{CBO}	—	5	—	—	mA	$V_{CB} = 150V$
Collector Cutoff Current	I_{CEO}	—	—	—	—	mA	$V_{CE} = 55V$ $V_{CE} = 70V$ $V_{CE} = 100V$
Collector Cutoff Current	I_{CEV}	—	—	—	20	mA	$V_{CE} = 110V, V_{BE} = -1.5V$ $V_{CE} = 130V, V_{BE} = 0$ $V_{CE} = 140V, V_{BE} = -1.5V$ $V_{CE} = 140V, V_{BE} = 0$
Collector Cutoff Current, 125°C	I_{CEV}	—	20	—	—	mA	$V_{CE} = 140V$
Collector Cutoff Current, 150°C	I_{CEV}	—	—	—	—	mA	$V_{CE} = 85V, V_{BE} = -1.5V$ $V_{CE} = 100V, V_{BE} = -1.5V$ $V_{CE} = 130V, V_{BE} = 0V$
Emitter Cutoff Current	I_{EBO}	—	5.0	—	—	mA	$V_{BE} = -5V$ $V_{BE} = -6.5V$ $V_{BE} = -7V$
Magnitude of Small Signal Forward — Current Transfer Ratio	$ h_{ie} $	—	—	12	—		$V_{CE} = 10V, I_C = 2A, f = 5 \text{ MHz}$ $V_{CE} = 10V, I_C = 1A, f = 10 \text{ MHz}$
Collector Capacitance	C_{ob}	—	300	—	300	pF	$V_{CB} = 10V, f = 1 \text{ MHz}$
Thermal Resistance: Junction-to-Case	$R_{\theta JC}$	—	—	—	1.25	°C/W	$V_{CE} = 10V, I_C = 10A$ $V_{CE} = 20V, I_C = 1A$

Notes:

1. Pulse width = 250 μ s; duty cycle \leq 1%.
2. Sustaining Voltage. Measured at a high current point where collector-emitter voltage is lowest. Current pulse length = 50 μ s; duty cycle \leq 1%.
Voltage clamped at maximum collector-emitter voltage.

* JEDEC registered values.