



## MJD50

# HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

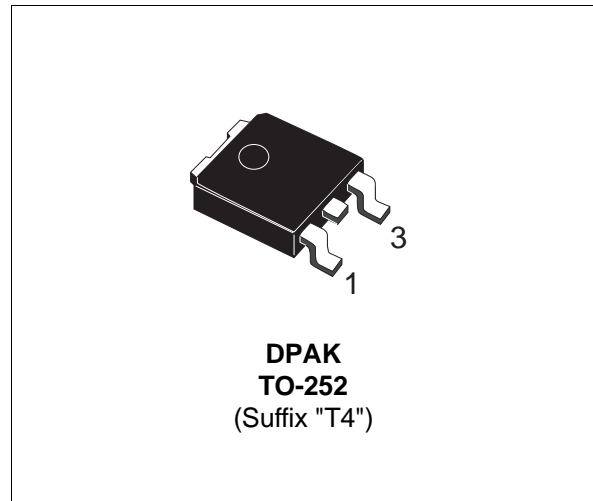
- STMicroelectronics PREFERRED SALESTYPE
- HIGH VOLTAGE CAPABILITY
- SURFACE-MOUNTING TO-252 (DPAK) POWER PACKAGE IN TAPE & REEL (SUFFIX "T4")
- ELECTRICALLY SIMILAR TO TIP50

### APPLICATIONS

- SWITCH MODE POWER SUPPLIES
- AUDIO AMPLIFIERS
- GENERAL PURPOSE SWITCHING AND AMPLIFIER

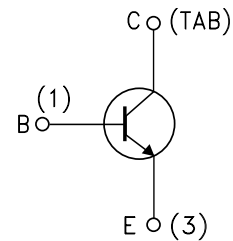
### DESCRIPTION

The MJD50 is manufactured using Medium Voltage Epitaxial Planar technology, resulting in a rugged high performance cost-effective transistor.



**DPAK  
TO-252**  
(Suffix "T4")

### INTERNAL SCHEMATIC DIAGRAM



SC07670

### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	500	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	400	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	5	V
$I_C$	Collector Current	1	A
$I_{CM}$	Collector Peak Current ( $t_p < 5$ ms)	2	A
$I_B$	Base Current	0.6	A
$I_{BM}$	Base Peak Current ( $t_p < 5$ ms)	1.2	A
$P_{tot}$	Total Dissipation at $T_c = 25$ °C	15	W
$T_{stg}$	Storage Temperature	-65 to 150	°C
$T_j$	Max. Operating Junction Temperature	150	°C

# MJD50

## THERMAL DATA

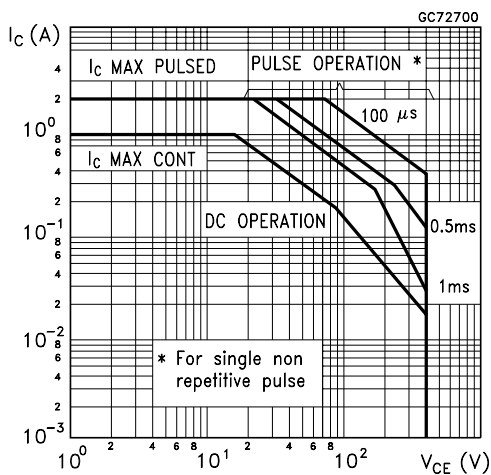
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	8.33	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	100	°C/W

## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

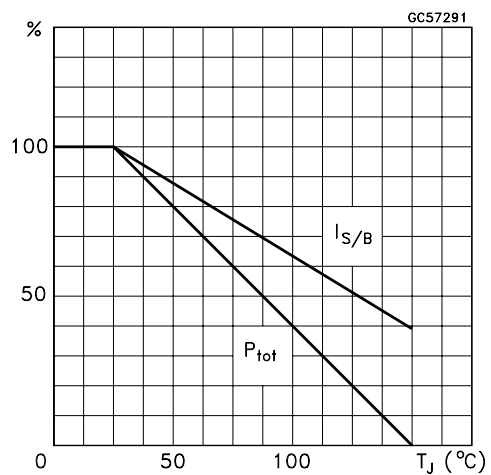
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CES</sub>	Collector Cut-off Current (V <sub>BE</sub> = 0)	V <sub>CE</sub> = 500 V			0.1	mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 300 V			0.1	mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 30 mA	400			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 1 A I <sub>B</sub> = 0.2 A			1	V
V <sub>BE(on)*</sub>	Base-Emitter On Voltage	I <sub>C</sub> = 1 A V <sub>CE</sub> = 10 V			1.5	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 0.3 A V <sub>CE</sub> = 10 V I <sub>C</sub> = 1 A V <sub>CE</sub> = 10 V	30 10		150	
f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 0.2 A V <sub>CE</sub> = 10 V f=2MHz	10			MHz
h <sub>fe</sub>	Small Signal Current Gain	I <sub>C</sub> = 0.2 A V <sub>CE</sub> = 10 V f=1kHz	25			

\* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

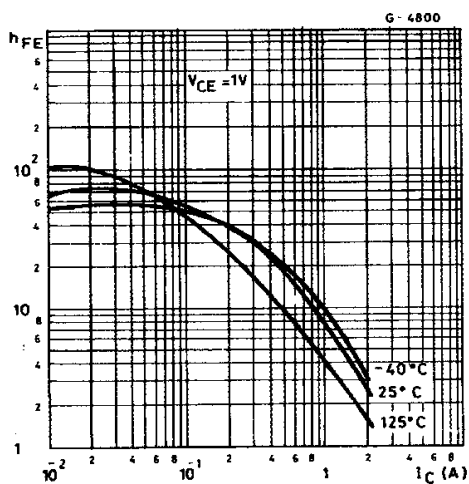
## Safe Operating Area



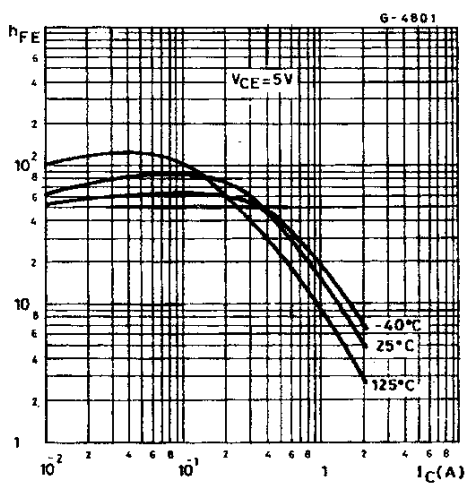
## Derating Curves



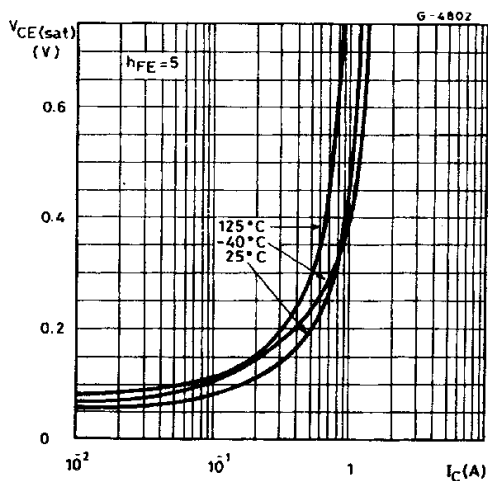
DC Current Gain



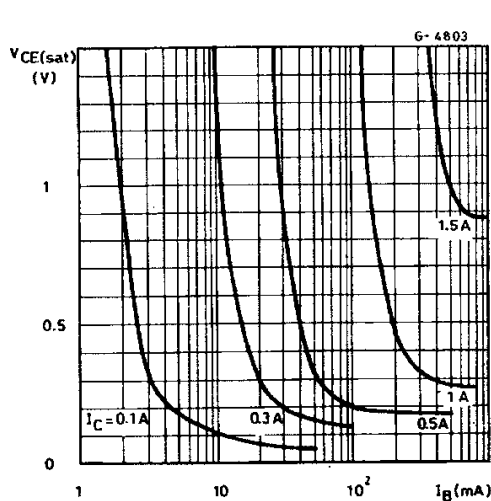
DC Current Gain



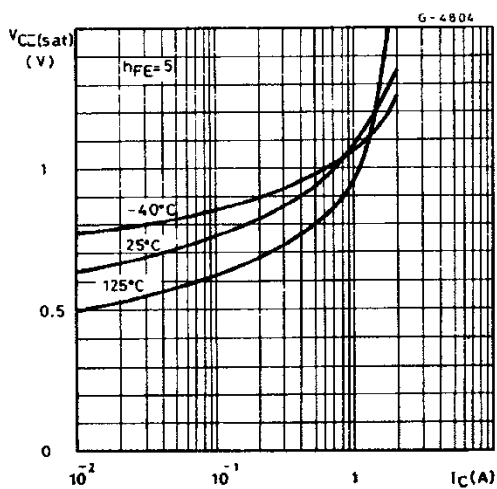
Collector-Emitter Saturation Voltage



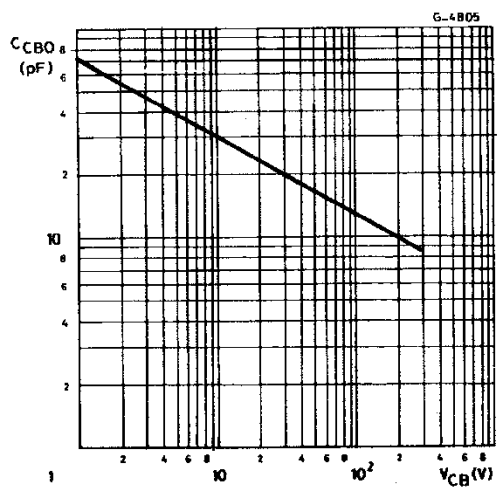
Collector-Emitter Saturation Voltage



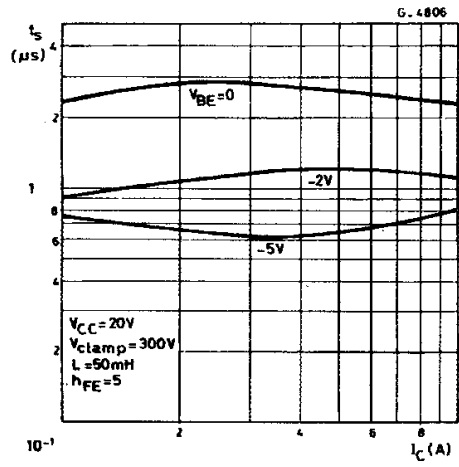
Base-Emitter Saturation Voltage



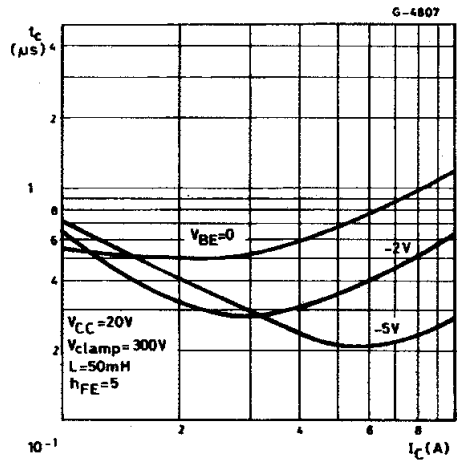
Collector-Base Capacitance



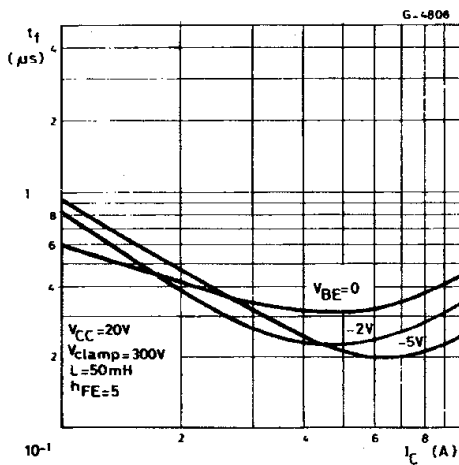
Switching Time Inductive Load



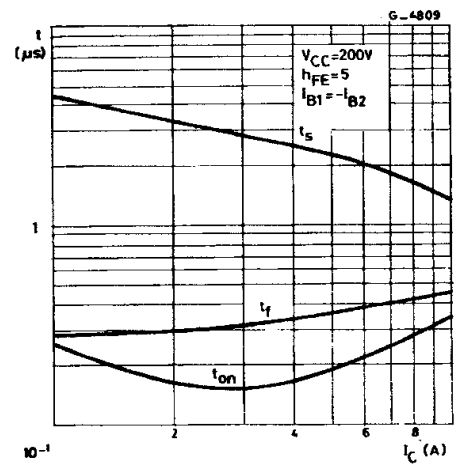
Switching Time Inductive Load



Switching Time Inductive Load

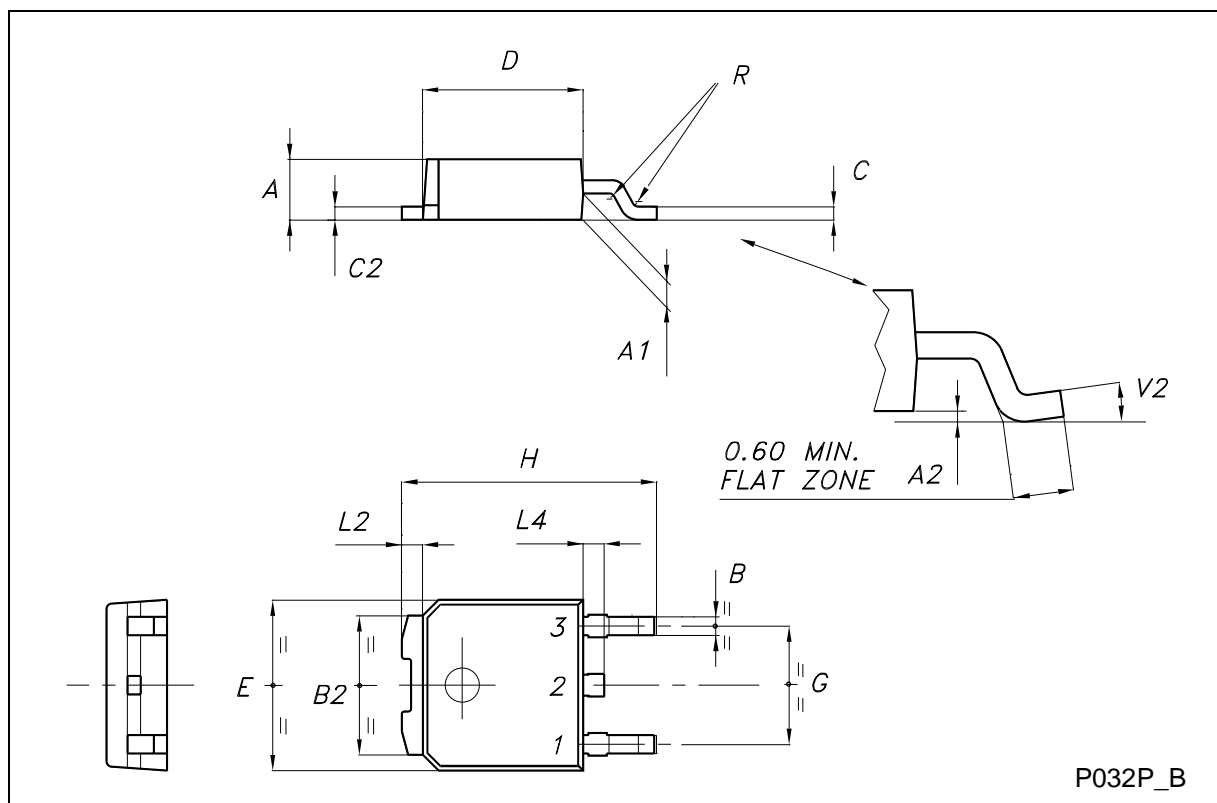


Switching Time Inductive Load



**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°



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