



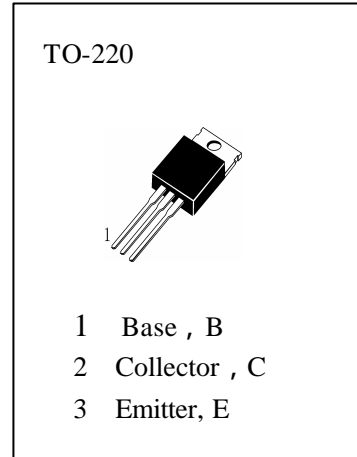
# HP50

## APPLICATIONS

High Voltage And switching.

## ABSOLUTE MAXIMUM RATINGS ( $T_a=25$ )

$T_{stg}$ —Storage Temperature.....	-65~150
$T_j$ —Junction Temperature.....	150
$P_C$ —Collector Dissipation ( $T_c=25$ ) .....	40W
$V_{CBO}$ —Collector-Base Voltage.....	500V
$V_{CEO}$ —Collector-Emitter Voltage.....	400V
$V_{EBO}$ —Emitter-Base Voltage.....	5V
$I_C$ —Collector Current( DC ).....	1A
$I_C$ —Collector Current ( Pulse ) .....	2A
$I_B$ —Base Current.....	0.6A



## ELECTRICAL CHARACTERISTICS ( $T_a=25$ )

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	400			V	$I_C=30mA, I_B=0$
I <sub>CEO</sub>	Collector Cut-off Current			1	mA	$V_{CE}=300V, I_B=0$
I <sub>EBO</sub>	Emitter-Base Cutoff Current			1	mA	$V_{EB}=5V, I_C=0$
I <sub>CES</sub>	Collector Cut-off Current			1	mA	$V_{CE}=500V, V_{EB}=0$
H <sub>FE</sub> ( 1 )	DC Current Gain	22		150		$V_{CE}=10V, I_C=0.3A$
H <sub>FE</sub> ( 2 )		10				$V_{CE}=10V, I_C=1A$
H <sub>FE</sub>		20				$V_{CE}=10V, I_C=0.2A, f=1MHz$
V <sub>CE(sat)</sub>	Collector- Emitter Saturation Voltage			1	V	$I_C=1A, I_B=0.2A$
V <sub>BE(on)</sub>	Base-Emitter On Voltage			1.5	V	$V_{CE}=10V, I_C=1A$
f <sub>T</sub>	Current Gain-Bandwidth Product	10			MHZ	$V_{CE}=10V, I_C=0.1A, f=2MHz$
R <sub>JC</sub>				3.125	/W	
R <sub>JA</sub>				62.5	/W	

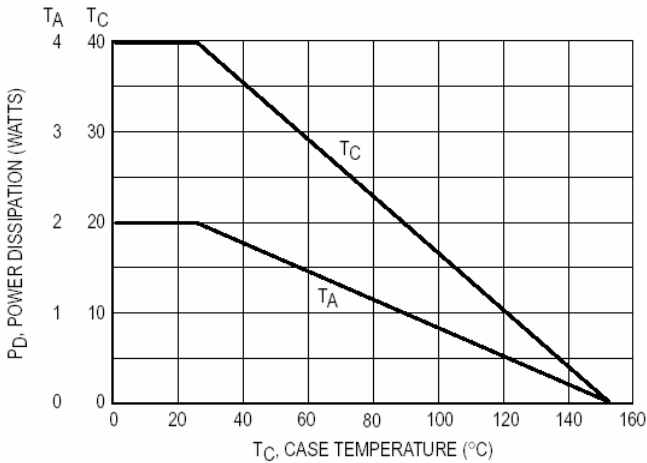
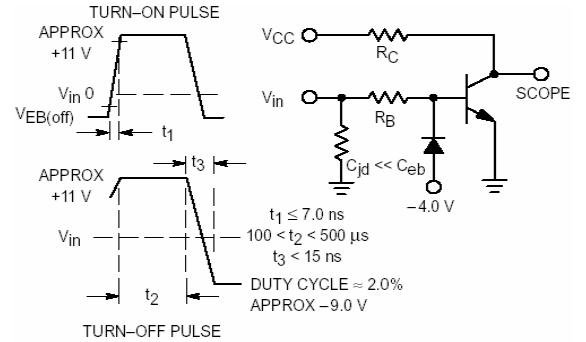


Figure 1. Power derating



$R_B$  and  $R_C$  VARIED TO OBTAIN DESIRED CURRENT LEVELS.

Figure 2. Switching Time Equivalent Circuit

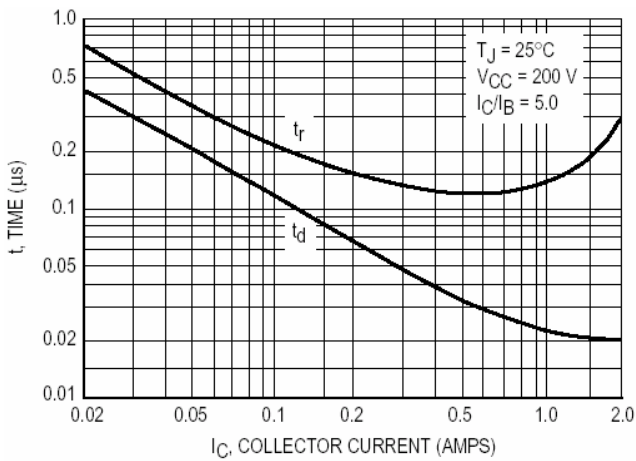


Figure 3. Turn-On Time

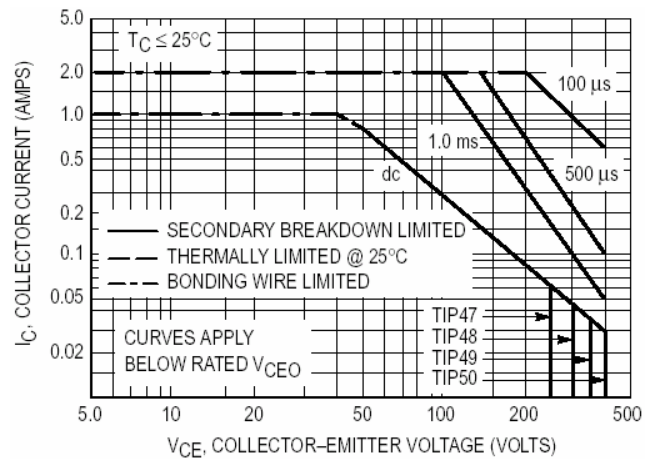


Figure 4. Active Region Safe Operating Area

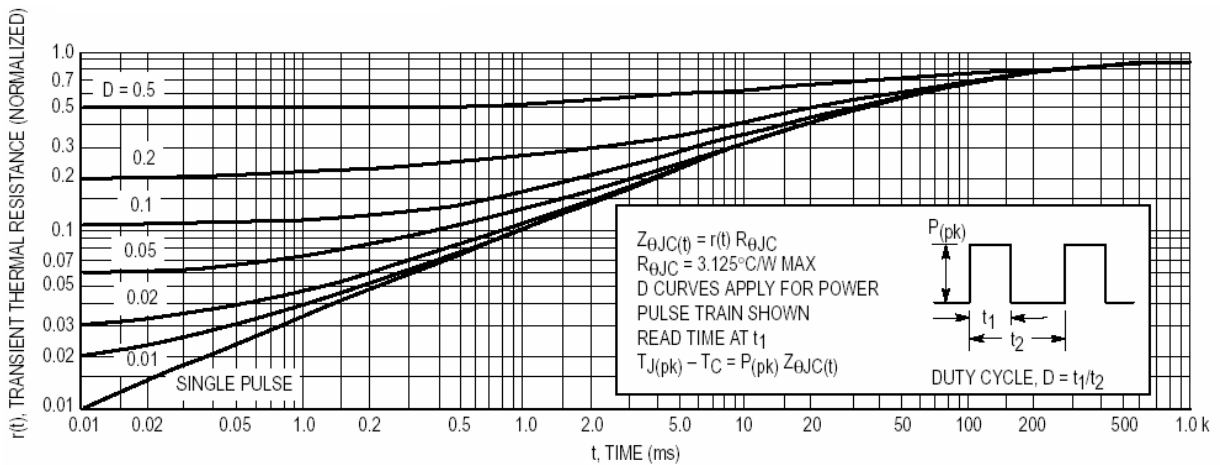


Figure 5. Thermal Response

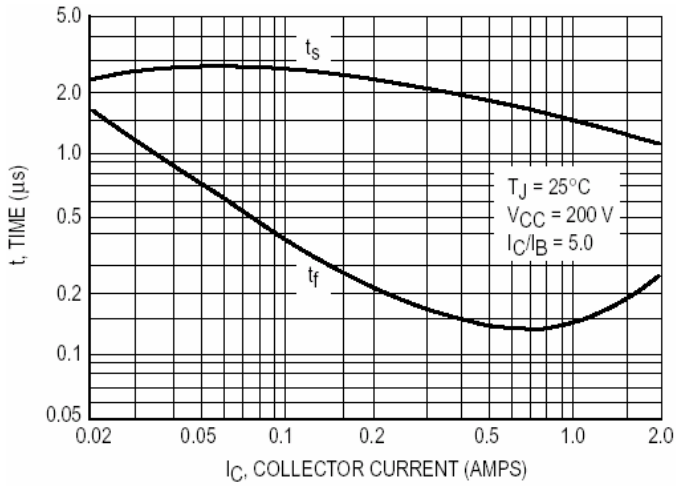


Figure 6. Turn-Off Time

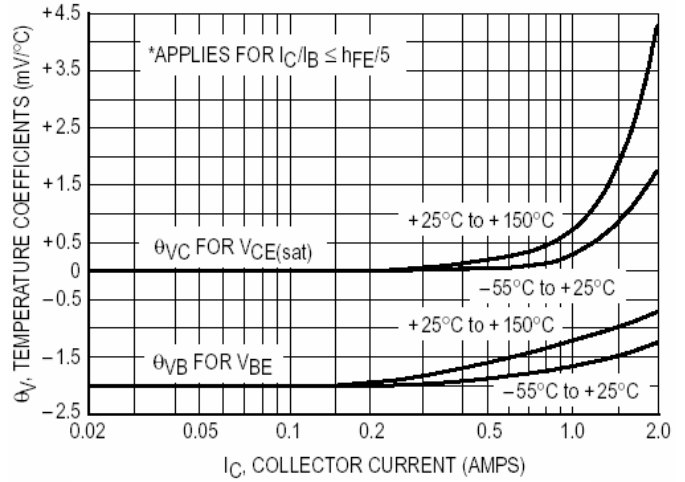
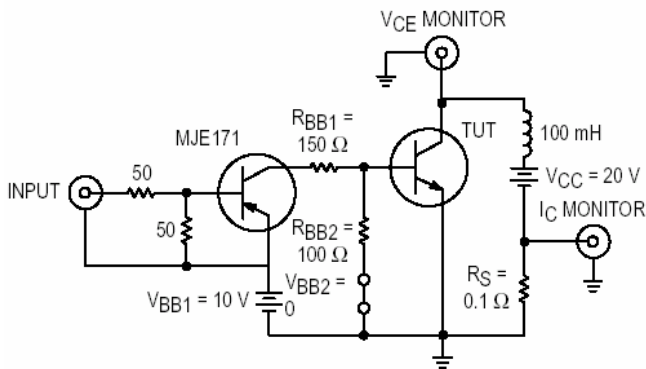


Figure 7. Temperature Coefficients



Note A: Input pulse width is increased until  $I_{CM} = 0.63$  A.

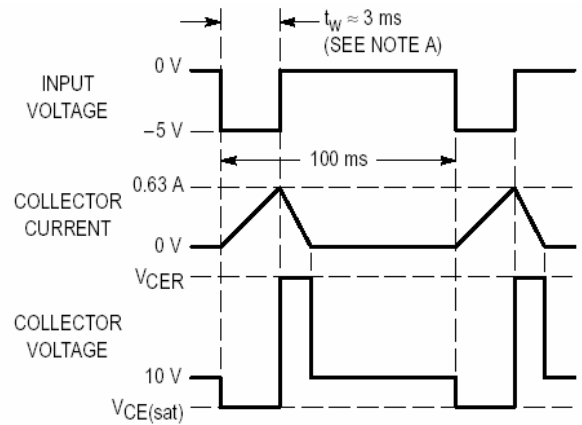


Figure 8. Inductive Load Switching

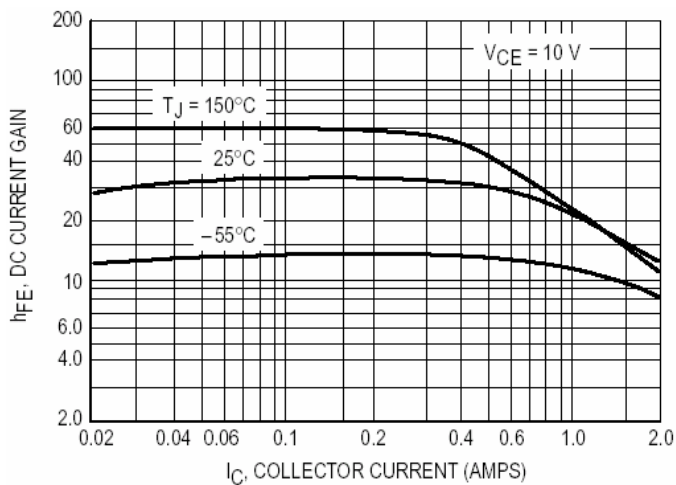


Figure 9. DC Current Gain

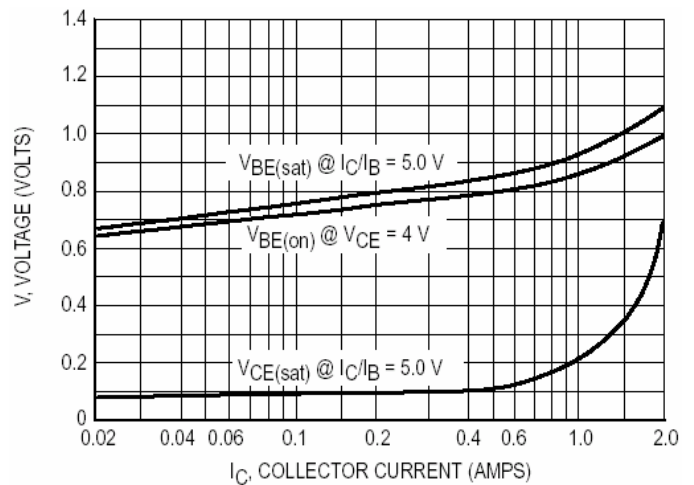


Figure 10. "On" Voltages