

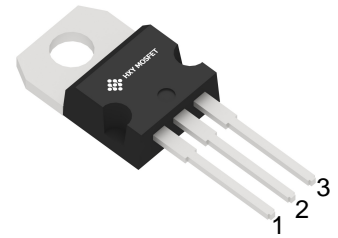


Features

- Low collector-emitter saturation voltage
- Complementary PNP transistors

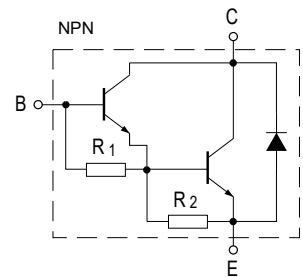
Maximum Ratings (Ta=25 unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage ($I_E = 0$)	100	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	100	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	5	V
I_C	Collector current	5	A
I_{CM}	Collector peak current	8	A
I_B	Base current	0.12	A
P_{TOT}	Total dissipation at $T_{case} = 25^\circ$	65	W
T_{STG}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C



TO-220S

1.BASE
2.COLLECTOR
3.EMITTER



R1 typ. =5 K R2 typ. =210

Electrical Characteristics (Ta=25 unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CEO}	Collector cut-off current ($I_B = 0$)	for $V_{CE} = 40\text{ V}$			0.5	mA
I_{CBO}	Collector cut-off current ($I_B = 0$)	for $V_{CE} = 100\text{ V}$			0.2	mA
I_{EBO}	Emitter cut-off current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			2	mA
$V_{CEO(sus)}^{(2)}$	Collector-emitter sustaining voltage ($I_B = 0$)	$I_C = 30\text{ mA}$	100			V
$V_{CE(sat)}^{(2)}$	Collector-emitter saturation voltage	$I_C = 3\text{ A}$ $I_B = 12\text{ mA}$ $I_C = 5\text{ A}$ $I_B = 20\text{ mA}$			2 4	V V
$V_{BE(on)}^{(2)}$	Base-emitter on voltage	$I_C = 3\text{ A}$ $V_{CE} = 3\text{ V}$			2.5	V
$h_{FE}^{(2)}$	DC current gain	$I_C = 0.5\text{ A}$ $V_{CE} = 3\text{ V}$ $I_C = 3\text{ A}$ $V_{CE} = 3\text{ V}$	1000 1000			

1. For PNP types voltage and current values are negative.
2. Pulsed duration = 300 μs , duty cycle $\leq 2\%$



Typical Characteristics

Figure 1. Safe operating area

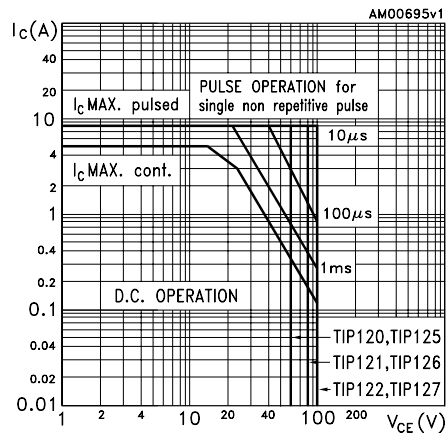


Figure 2. Derating curve

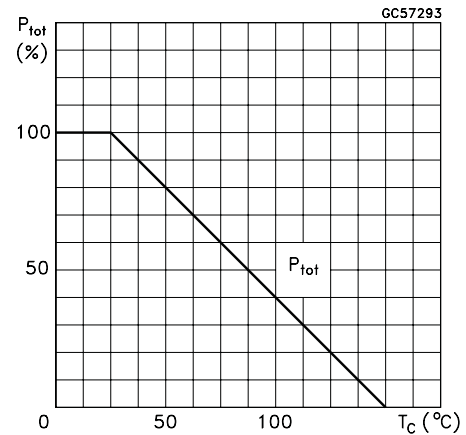


Figure 3. DC current gain

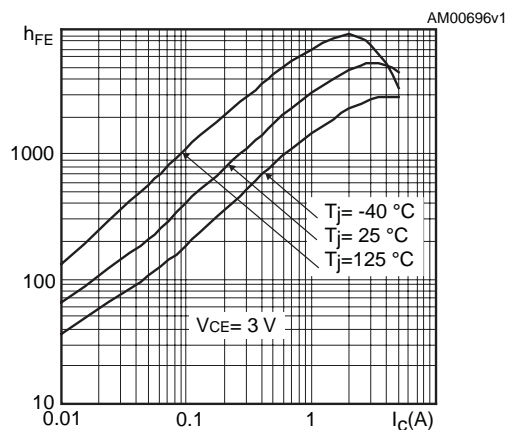


Figure 4. Collector-emitter saturation voltage

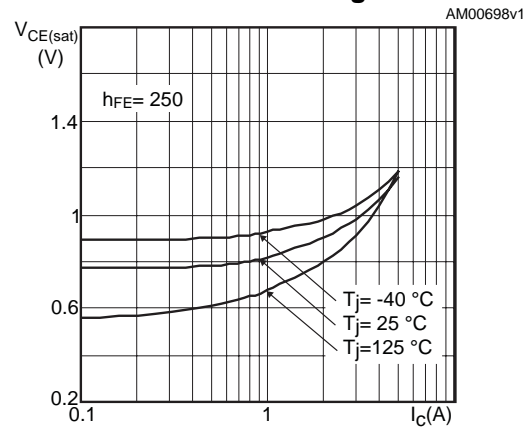


Figure 5. Base-emitter saturation voltage

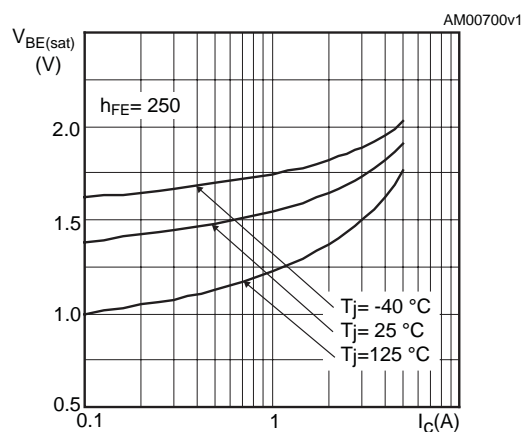


Figure 6. Base-emitter on voltage

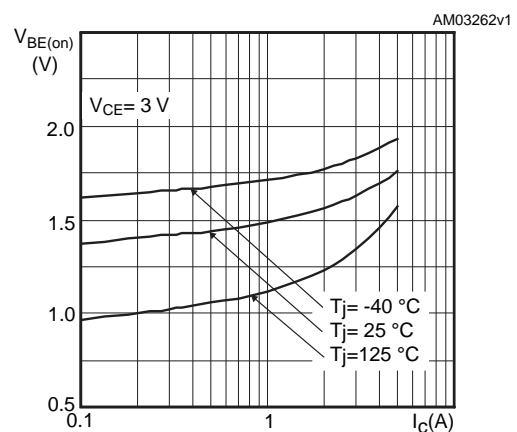




Figure 7. Switching time on resistive load

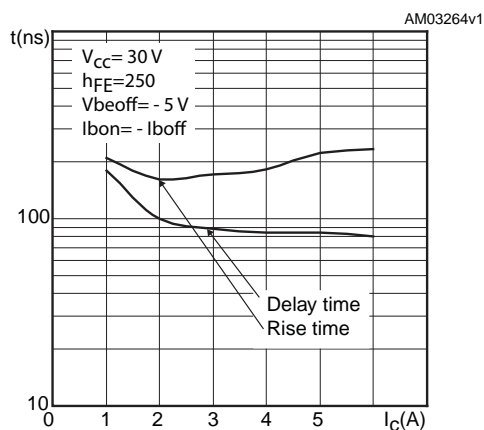


Figure 8. Switching time on resistive load

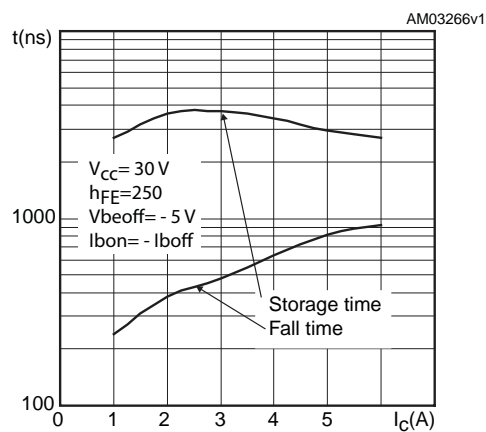
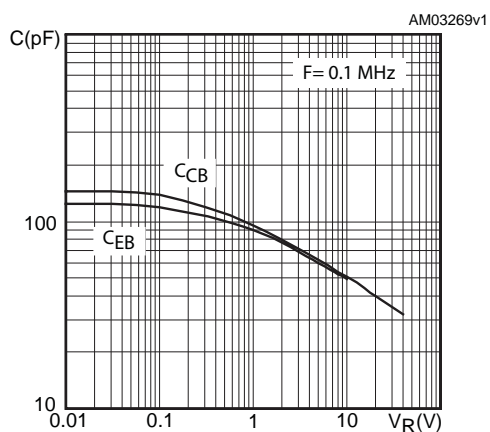
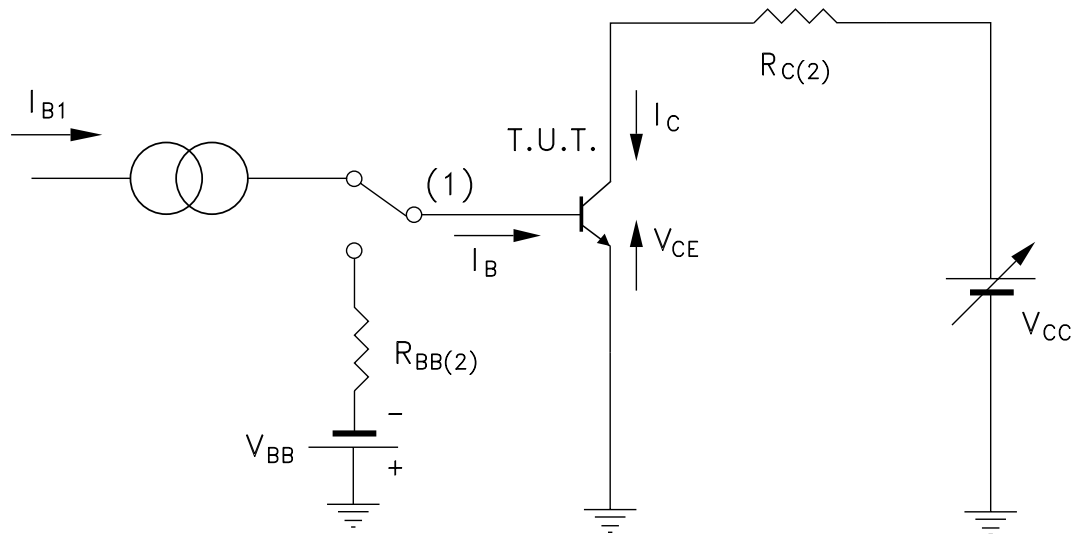


Figure 9. Capacitances





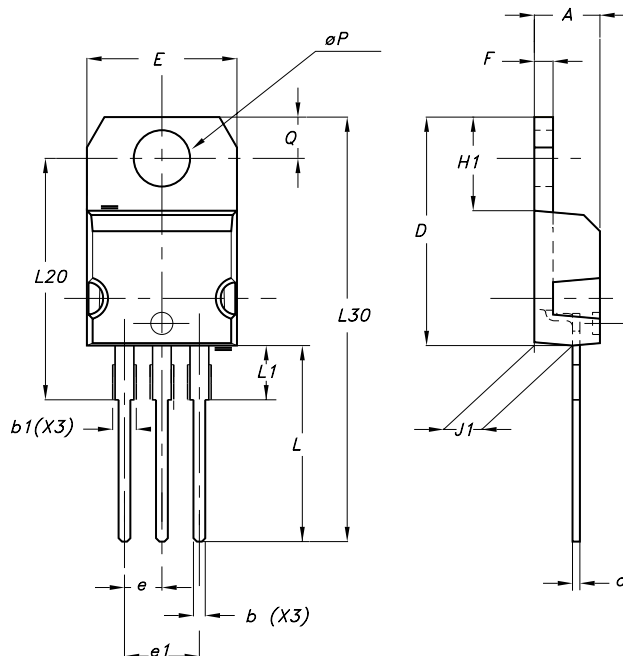
Resistive load switching



- 1) Fast electronic switch
- 2) Non-inductive resistor



Package Information TO-220S



DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
b	0.61		0.88	0.024		0.034
b1	1.15		1.70	0.045		0.066
c	0.49		0.70	0.019		0.027
D	15.25		15.75	0.60		0.620
E	10		10.40	0.393		0.409
e	2.40		2.70	0.094		0.106
e1	4.95		5.15	0.194		0.202
F	1.23		1.32	0.048		0.052
H1	6.20		6.60	0.244		0.256
J1	2.40		2.72	0.094		0.107
L	13		14	0.511		0.551
L1	3.50		3.93	0.137		0.154
L20		16.40			0.645	
L30		28.90			1.137	
øP	3.75		3.85	0.147		0.151
Q	2.65		2.95	0.104		0.116



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