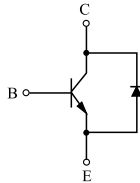


HIGH VOLTAGE HIGH SPEED POWER SWITCH

APPLICATION.

- Built-in Free wheeling Diode makes efficient anti saturation operation.
- Suitable for half bridge light ballast Applications.
- Low base drive requirement.



Equivalent Circuit

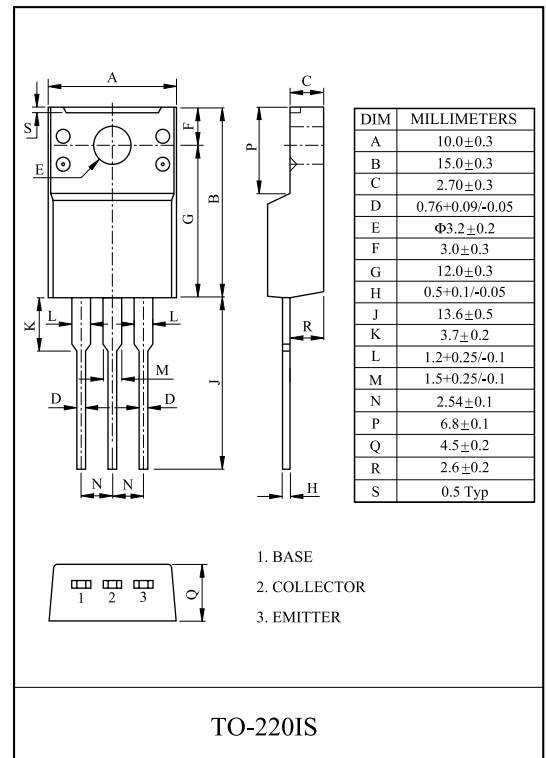
MAXIMUM RATING (Ta=25 °C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	800	V
Collector-Emitter Voltage		V_{CEO}	400	V
Emitter-Base Voltage		V_{EBO}	10	V
Collector Current	DC	I_C	5	A
	Pulse	I_{CP}	10	
Base Current		I_B	2	A
Collector Power Dissipation (Tc=25 °C)		P_C	30	W
Junction Temperature		T_j	150	
Storage Temperature Range		T_{stg}	-55 150	

ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB}=700V, I_E=0$	-	-	10	μA
	I_{EBO}	$V_{EB}=9V, I_C=0$	-	-	10	μA
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10mA, I_E=0$	800	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	10	-	-	V
DC Current Gain	$h_{FE(1)}$ (Note)	$V_{CE}=5V, I_C=1A$	18	-	35	
	$h_{FE(2)}$	$V_{CE}=5V, I_C=2A$	8	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1A, I_B=0.2A$	-	-	0.5	V
		$I_C=2A, I_B=0.5A$	-	-	0.6	
		$I_C=4A, I_B=1A$	-	-	1	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1A, I_B=0.2A$	-	-	1.2	V
		$I_C=2A, I_B=0.5A$	-	-	1.6	
Collector Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$	-	65	-	pF

Note : h_{FE} Classification R : 18~27, O : 23~35



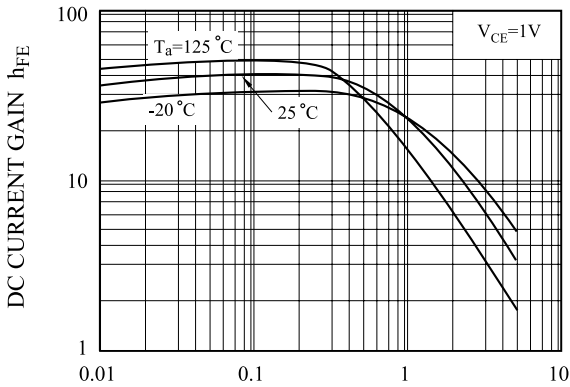
MJE13005DF

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	f_T	$V_{CE}=10V, I_C=0.5A$	4	-	-	MHz
Turn-On Time	t_{on}		-	-	0.15	μs
Storage Time	t_{stg}		-	-	5	μs
Fall Time	t_f		$I_{B1}=0.4A, I_{B2}=-1A$ DUTY CYCLE $\leq 2\%$	-	-	0.8
Diode Forward Voltage	V_F	$I_F=2A$	-	-	1.6	V
*Reverse recovery time (di/dt=10A/μs)	t_{rr}	$I_F=0.4A$	-	800	-	nS
		$I_F=1A$	-	1.4	-	μs
		$I_F=2A$	-	1.9	-	μs

*Pulse Test : Pulse Width = 5mS, Duty cycles 10%

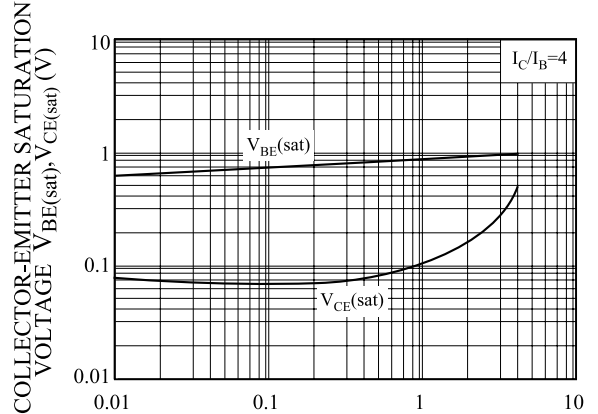
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$h_{FE} - I_C$



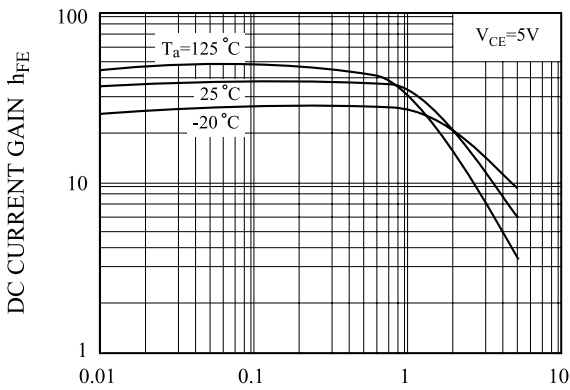
COLLECTOR CURRENT I_C (A)

$V_{BE(sat)}, V_{CE(sat)} - I_C$



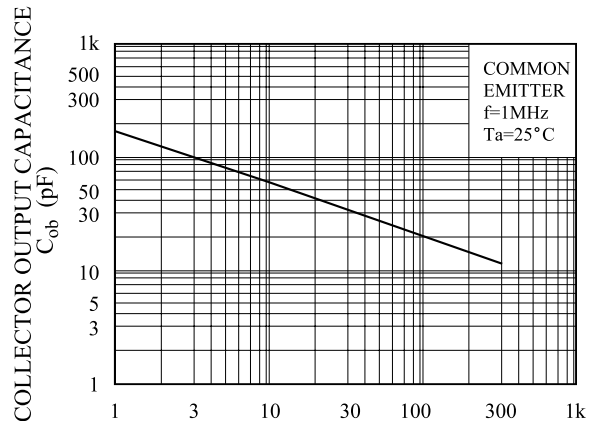
COLLECTOR CURRENT I_C (A)

$h_{FE} - I_C$



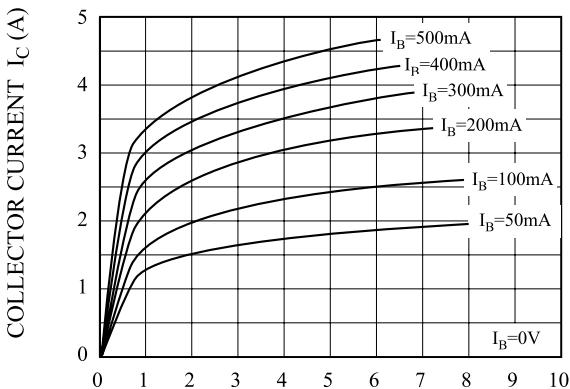
COLLECTOR CURRENT I_C (A)

$C_{ob} - V_{CB}$



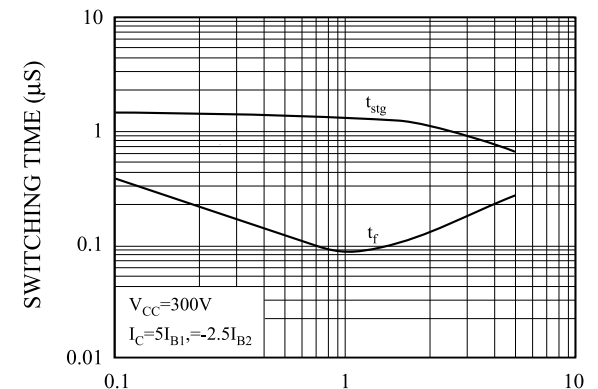
COLLECTOR-BASE VOLTAGE V_{CB} (V)

$I_C - V_{CE}$



COLLECTOR EMITTER VOLTAGE V_{CE} (V)

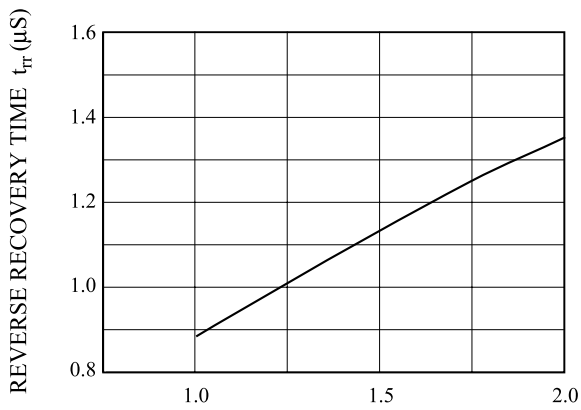
SWITCHING CHARACTERISTIC



COLLECTOR CURRENT I_C (A)

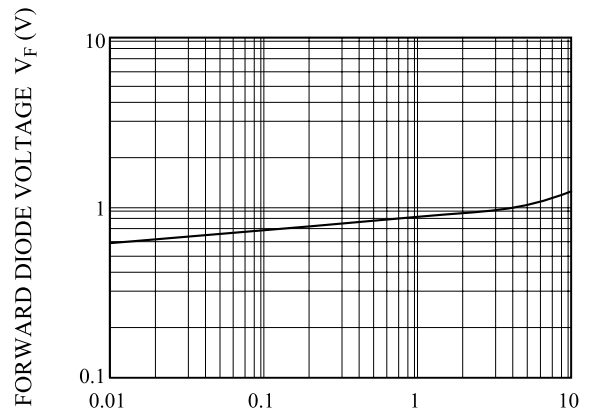
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$t_{rr} - I_F$



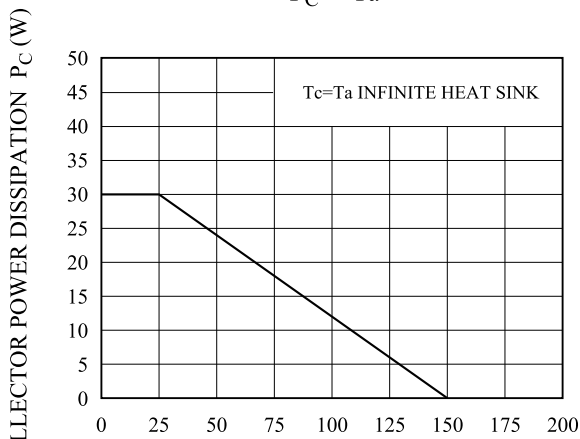
FORWARD CURRENT I_F (A)

$V_F - I_F$



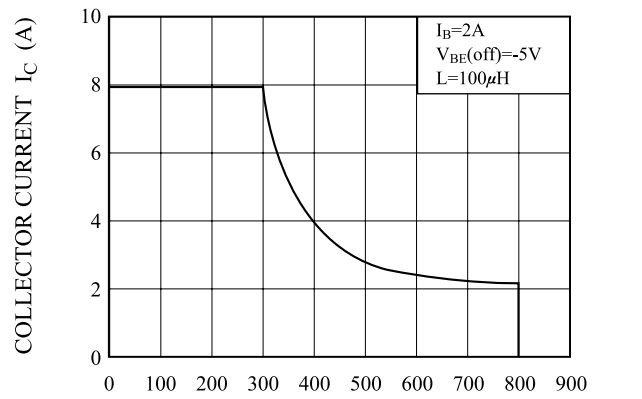
FORWARD DIODE CURRENT I_F (A)

$P_C - T_a$



AMBIENT TEMPERATURE T_a ($^{\circ}$ C)

REVERSE BIASED SAFE OPERATING AREA



COLLECTOR-EMITTER CLAMP VOLTAGE V_{CE} (V)