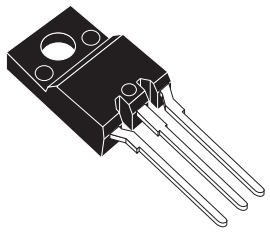
ST1803DFH

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- NEW Fully Plastic TO-220 for HIGH VOLTAGE APPLICATIONS
- NEW SERIES, ENHANCED PERFORMANCE
- INTEGRATED FREE WHEELING DIODE
- HIGH VOLTAGE CAPABILITY (> 1500 V)
- HIGH SWITCHING SPEED
- TIGTHER hfe CONTROL
- IMPROVED RUGGEDNESS
- FULLY INSULATED PACKAGE (U.L. COMPLIANT) FOR EASY MOUNTING
- CREEPAGE DISTANCE PATH > 4 mm



TO-220FH

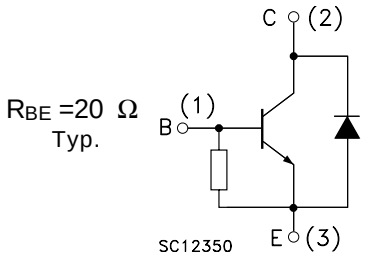
APPLICATIONS:

- HORIZONTAL DEFLECTION FOR COLOR TVS

DESCRIPTION

The device is manufactured using Diffused Collector technology for more stable operation Vs base drive circuit variations resulting in very low worst case dissipation.

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	1500	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	600	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	7	V
I_C	Collector Current	10	A
I_{CM}	Collector Peak Current (t_p < 5 ms)	15	A
I_B	Base Current	4	A
P_{tot}	Total Dissipation at T_c = 25 °C	40	W
V_{isol}	Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink	2500	V
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

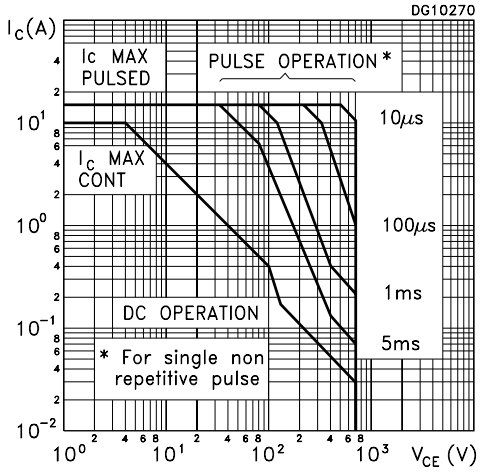
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	3.125	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

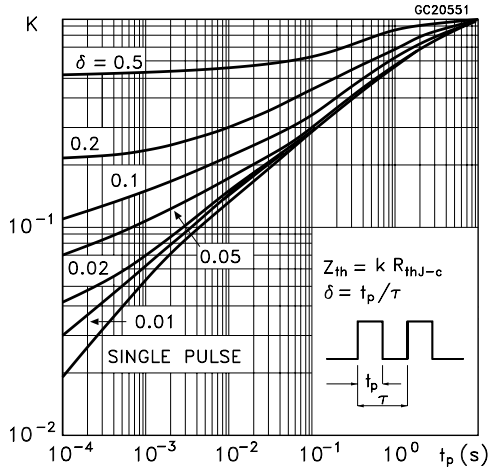
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 1500 V V_{CE} = 1500 V T_j = 125 °C			1 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 4 V	130		400	mA
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_C = 0)	I_E = 700 mA	7			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 4 A I_B = 0.8 A I_C = 4 A I_B = 1.2 A		3	5 1.5	V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 4 A I_B = 0.8 A			1.2	V
h_{FE}*	DC Current Gain	I_C = 1 A V_{CE} = 5 V I_C = 4.5 A V_{CE} = 1 V I_C = 4.5 A V_{CE} = 5 V	10 5	15 5	20 9	
V_F	Diode Forward Voltage	I_F = 5 A		1.5	2	V
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 4 A $I_{Bon(END)}$ = 0.8 A L_B = 5 µH V_{BB} = -2.5 V f = 16 KHz (see figure 1)		 2.7 0.3	 4 0.6	 µs µs

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

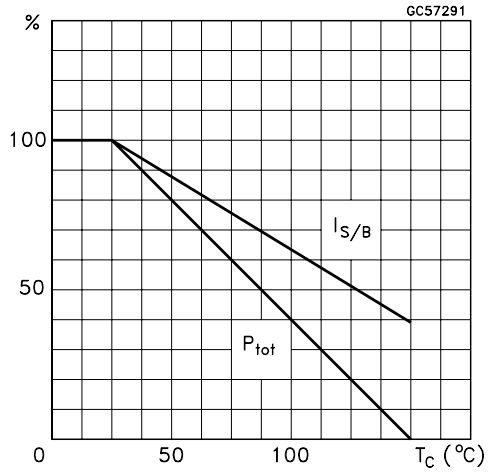
Safe Operating Area



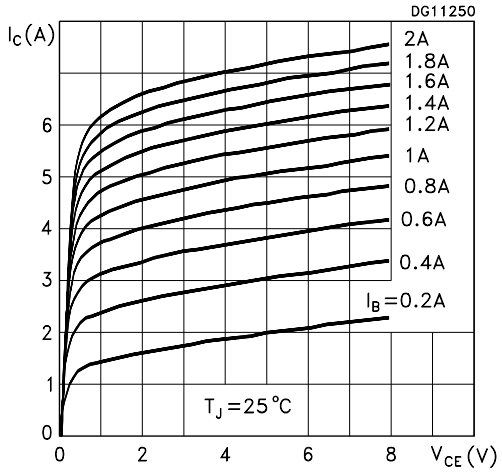
Thermal Impedance



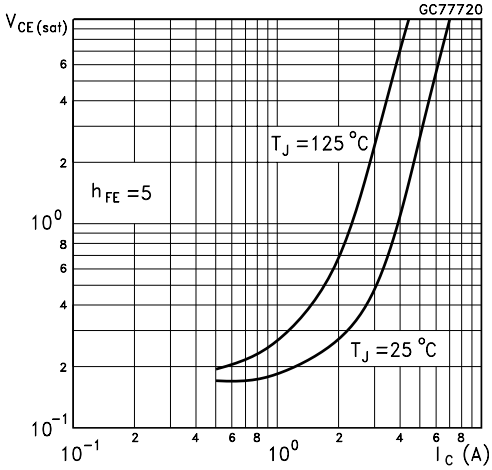
Derating Curve



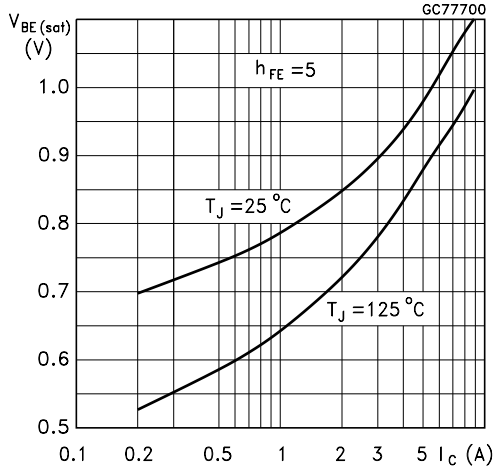
Output Characteristics



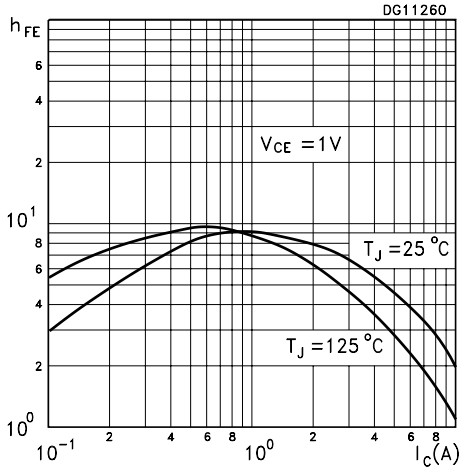
Collector Emitter Saturation Voltage



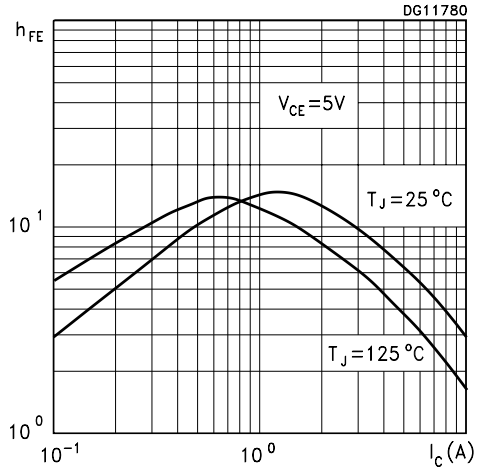
Base Emitter Saturation Voltage



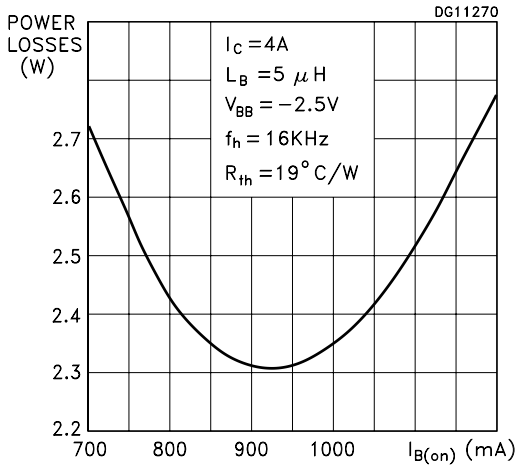
DC Current Gain



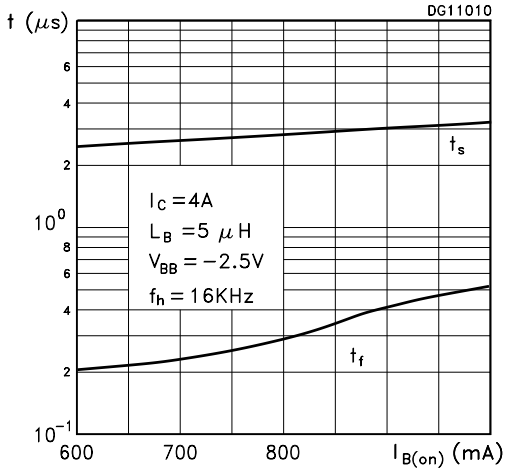
DC Current Gain



Power losses



Switching Time Inductive Load



Reverse Biased SOA

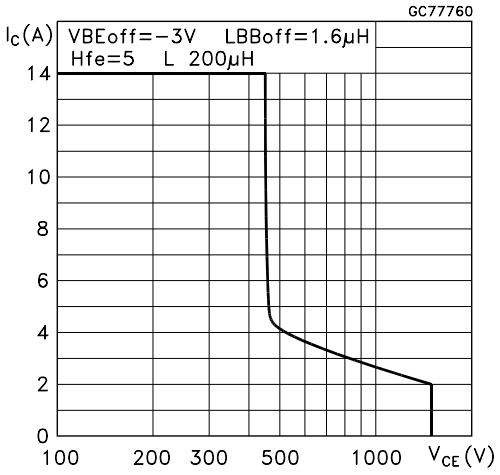
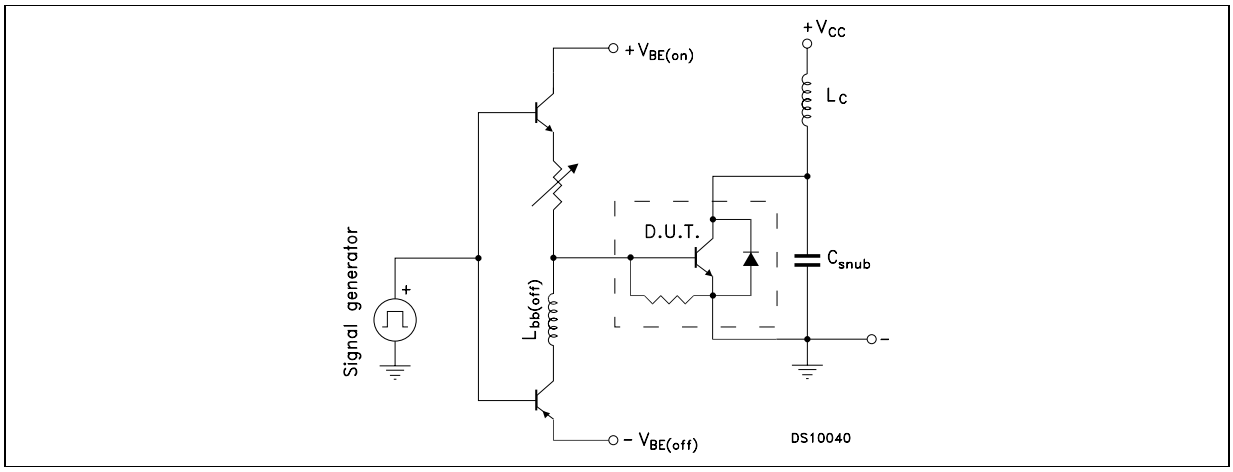


Figure 1: Inductive Load Switching Test Circuit.



TO-220FH (Fully plastic High voltage) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
B	2.5		2.7	0.098		0.106
D	2.5		2.75	0.098		0.108
E	0.45		0.7	0.017		0.027
F	0.75		1	0.030		0.039
F1	1.3		1.8	0.051		0.070
F2	1.3		1.8	0.051		0.070
G	4.95		5.2	0.195		0.204
G1	2.4		2.7	0.094		0.106
H	10		10.4	0.393		0.409
L2		16			0.630	
L3	28.6		30.6	1.126		1.204
L4	9.8		10.6	0.385		0.417
L5		3.4			0.134	
L6	15.9		16.4	0.626		0.645
L7	9		9.3	0.354		0.366
L8	14.5		15	0.570		0.590
L9		2.4			0.094