S2000AFI

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

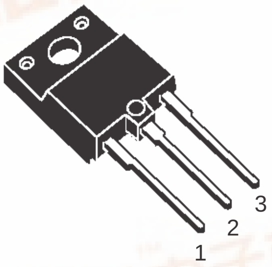
- STMicroelectronics PREFERRED SALESTYPE
- HIGH VOLTAGE CAPABILITY
- U.L. RECOGNISED ISOWATT218 PACKAGE (U.L. FILE # E81734 (N).

APPLICATIONS:

- HORIZONTAL DEFLECTION FOR COLOUR TV

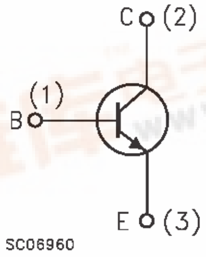
DESCRIPTION

The S2000AFI is manufactured using Multiepitaxial Mesa technology for cost-effective high performance and uses a Hollow Emitter structure to enhance switching speeds.



ISOWATT218

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage (V_{BE} = 0)	1500	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	700	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	10	V
I_C	Collector Current	8	A
I_{CM}	Collector Peak Current (t_p < 5 ms)	15	A
P_{tot}	Total Dissipation at T_c = 25 °C	50	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

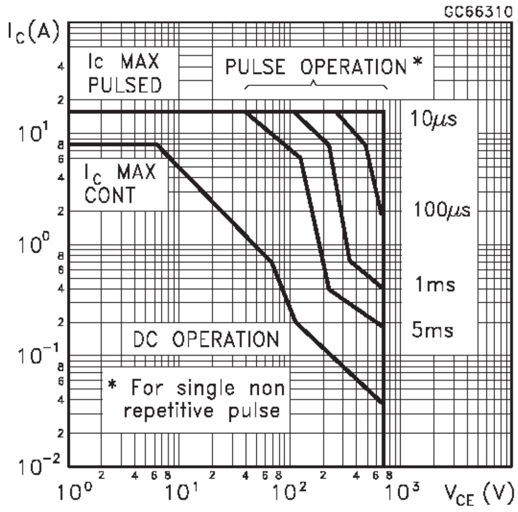
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	2.5	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

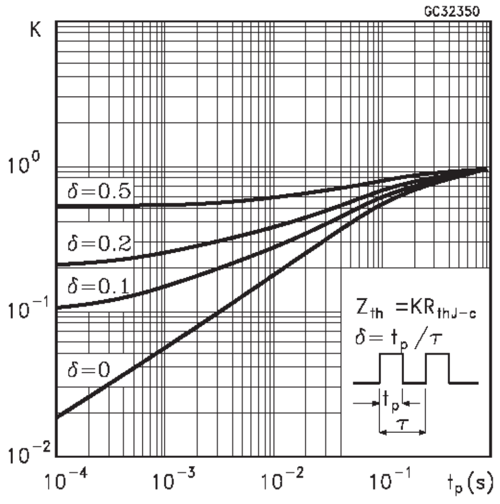
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 1500 V T_C = 125 ^oC V_{CE} = 1500 V			1 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			100	μA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA	700			V
V_{EBO}	Emitter Base Voltage (I_C = 0)	I_E = 10 mA	10			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 4.5 A I_B = 2 A			1	V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 4.5 A I_B = 2 A			1.3	V
	INDUCTIVE LOAD	I_C = 4.5 A h_{FE} = 2.5 V_{CC} = 140 V				
t_s	Storage Time	L_C = 0.9 mH L_B = 3 μH		7		μs
t_f	Fall Time			0.55		μs
f_T	Transition Frequency	I_C = 0.1 A V_{CE} = 5 V f = 5 MHz		7		MHz

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

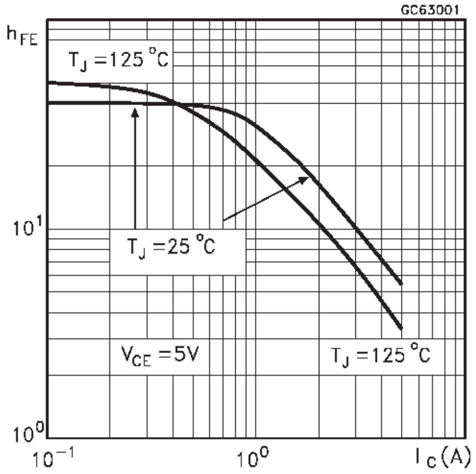
Safe Operating Area.



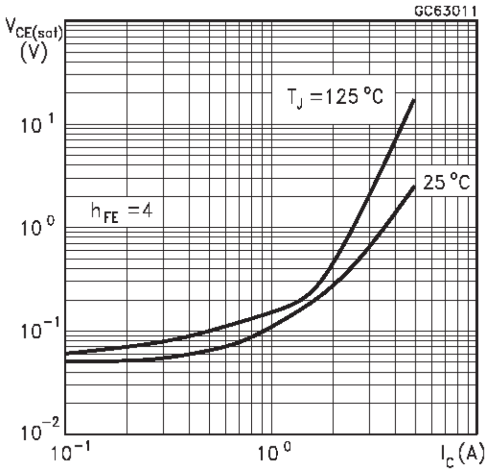
Thermal Impedance



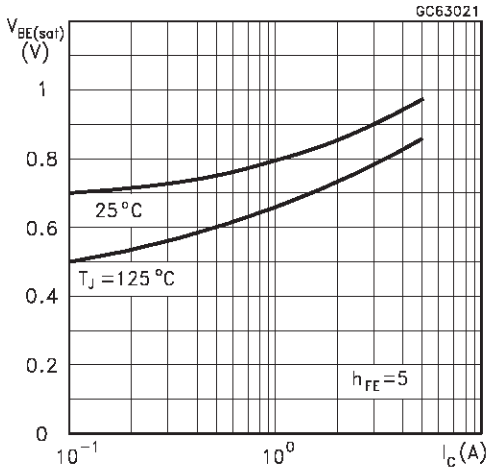
DC Current Gain



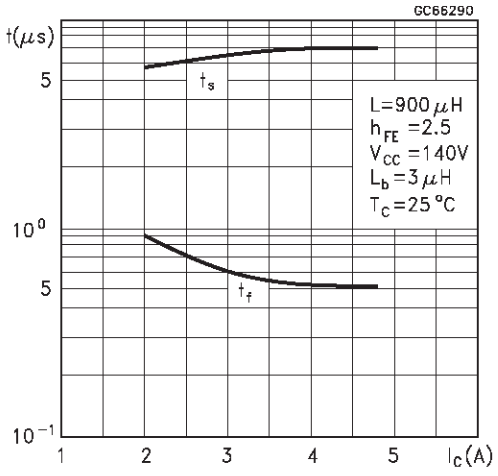
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage



Switching Time Inductive Load



Switching Time Inductive Load (see figure 1)

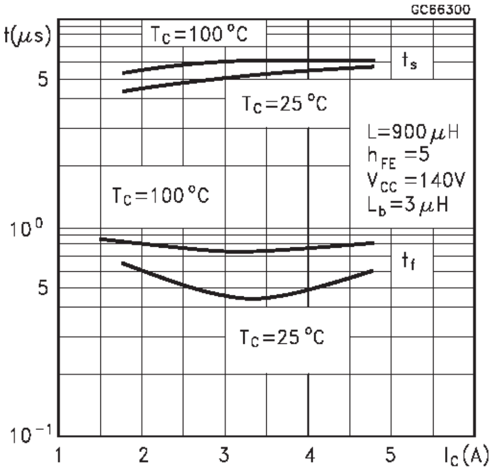
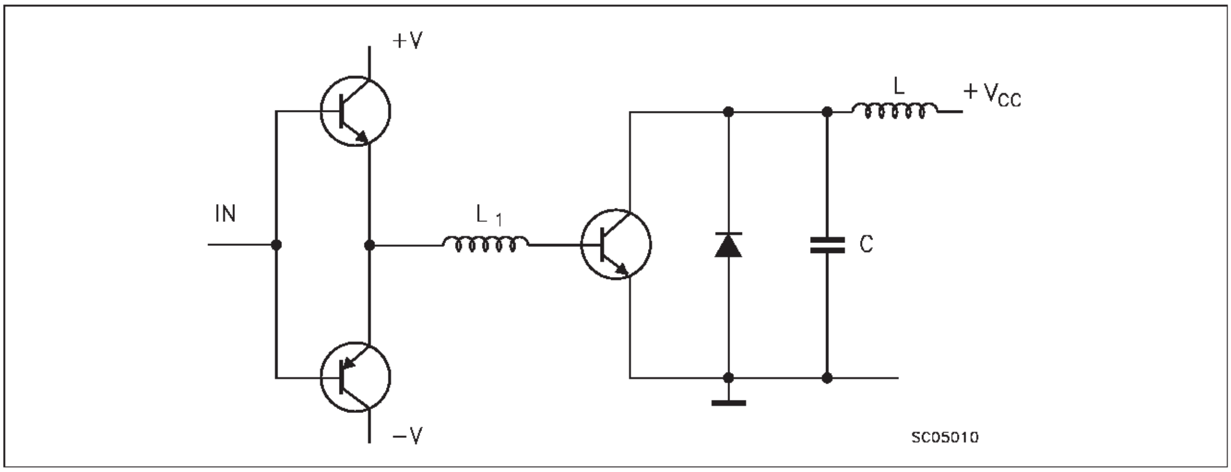
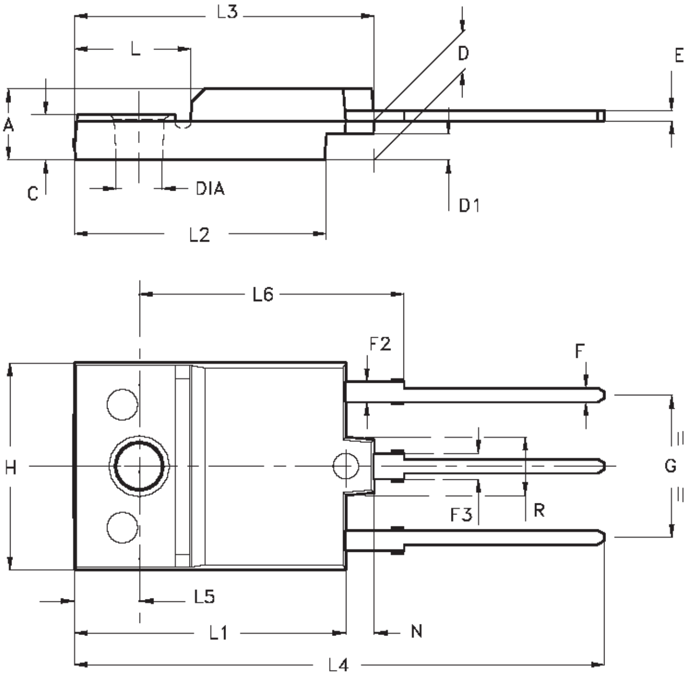


Figure 1: Inductive Load Switching Test Circuit.



ISOWATT218 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.35		5.65	0.211		0.222
C	3.30		3.80	0.130		0.150
D	2.90		3.10	0.114		0.122
D1	1.88		2.08	0.074		0.082
E	0.75		0.95	0.030		0.037
F	1.05		1.25	0.041		0.049
F2	1.50		1.70	0.059		0.067
F3	1.90		2.10	0.075		0.083
G	10.80		11.20	0.425		0.441
H	15.80		16.20	0.622		0.638
L		9			0.354	
L1	20.80		21.20	0.819		0.835
L2	19.10		19.90	0.752		0.783
L3	22.80		23.60	0.898		0.929
L4	40.50		42.50	1.594		1.673
L5	4.85		5.25	0.191		0.207
L6	20.25		20.75	0.797		0.817
N	2.1		2.3	0.083		0.091
R		4.6			0.181	
DIA	3.5		3.7	0.138		0.146



- Weight : 4.9 g (typ.)
- Maximum Torque (applied to mounting flange) Recommended 0.8 Nm; Maximum: 1 Nm
- The side of the dissipator must be flat within 80 µm

P025C/A

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