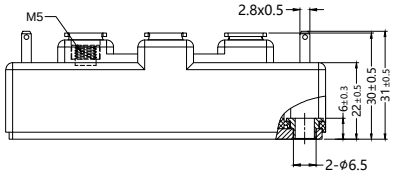
S4G75T60SC9

4 Units H bridge IGBT modules

Dimension: mm

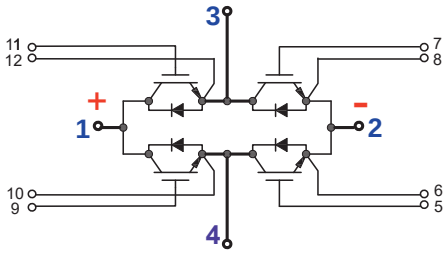


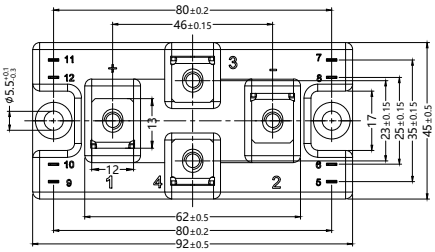
V_{CES}=1200V

I_{C100}=4X75A

$V_{CE(sat)}$≤2.10V

$t_{fi(typ)}$=49ns





Absolute Maximum Ratings				
Symbol	**Conditions**		**Values**	**Units**
IGBT				
V_{CES}	T_j=25°C		600	V
I_C	T_j=175°C	Tc=25°C	150	A
		Tc=100°C	75	A
I_{Cnom}	Tc=100°C Every chip		75	A
I_{CRM}	I_{CRM}=3×I_{Cnom}		150	A
V_{GES}			±20	V
tpsc	V_{CC}=800V V_{GE} ≤15V V_{GES} ≤1200V	T_j=150°C	10	μs
T_j			-40…175	°C
Inverse Diode				
I_F	T_j=175°C	Tc=25°C	50	A
		Tc=100°C	35	A
I_{Fnom}			35	A
I_{FRM}	I_{FRM}=3×I_{Fnom}		75	A
I_{FSM}	tP =10ms; sin180° ; Tj=25°C		75	A
T_j			-40…+150	°C
Module				
$I_{t(RMS)}$	Tteminal = 80°C		75	A
T_{stg}			-40…125	°C
V_{Isol}	AC sinus 50 Hz,t=1min		4000	V

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4 Units H bridge IGBT modules

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
IGBT						
$V_{CE(sat)}$	I_C=75A V_{GE} =15V chiplevel	T_j =25°C		1.55	1.90	V
		T_j =150°C		1.85	2.15	V
V_{CE0}	chiplevel	T_j =25°C		0.80	0.90	V
		T_j =150°C		0.70	0.80	V
r_{CE}	V_{GE} =15V chiplevel	T_j =25°C		3.20	3.60	
		T_j =150°C		3.50	3.90	
$V_{GE(th)}$	V_{GE}=V_{CE}, I_C = 3mA		5	5.8	6.5	V
I_{CES}	V_{GE} =0V	T_j =25°C			1	mA
	V_{CE} = 600 V	T_j =150°C				mA
C_{ies}	V_{CE} =25V	f=1MHz		3.20		nF
C_{oes}	V_{GE} =0V	f=1MHz		0.98		nF
C_{res}		f=1MHz		0.09		nF
Q_G	V_{GE} = - 8 V...+ 15 V			415		nC
R_{Gint}	T_j =25°C			10		
$t_{d(on)}$	V_{CC} = 300 V I_C =75A V_{GE} =±15V R_{Gon}=1Ω R_{Goff} = 1Ω di/dt_{on} = 1600 A/μs di/dt_{off} =950A/μs	T_j =150°C		24		ns
t_r		T_j =150°C		15		ns
E_{on}		T_j =150°C		0.33		mJ
$t_{d(off)}$		T_j =150°C		175		ns
t_f		T_j =150°C		55		ns
E_{off}		T_j =150°C		2.0		mJ
$R_{th(j-c)}$	per IGBT				0.175	K/W

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4 Units H bridge IGBT modules

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
Inverse diode						
$V_F = V_{EC}$	I_F =35A V_{GE} =0V chiplevel	T_j =25°C		1.70	2.00	V
		T_j =150°C		1.60	1.90	V
V_{F0}	chiplevel	T_j =25°C		1.30	1.50	V
		T_j =150°C		0.90	1.10	V
r_F	chiplevel	T_j =25°C		19	23	mΩ
		T_j =150°C		26	28	mΩ
I_{RRM}	I_F =35A di/dt_{off} =990A/µs V_{GE} =±15V V_{CC} = 600 V	T_j =150°C		37		A
Q_{rr}		T_j =150°C		2.6		µC
E_{rr}		T_j =150°C		0.35		mJ
$R_{th(j-c)}$	per diode				0.77	K/W
Module						
L_{CE}				30		nH
$R_{CC'+EE'}$	measured per switch	T_C =25°C		0.65		mΩ
		T_C =125°C		1.09		mΩ
$R_{th(c-s)}$	calculated without thermal coupling (λ_{grease}=0.81 W/(m*K))			0.04	0.05	K/W
M_s	to heat sink M5		3		5	Nm
M_t		to terminals M5	2.5		5	Nm
						Nm
w					170	g

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4 Units H bridge IGBT modules

Features

- Trench Gate Field Stop Technology IGBT
- Fast Recovery Free Wheeling Diode
- Low Switching Losses
- Vce(sat) with positive temperature coefficient
- Fast Switching and short tail current
- Switched mode power supplies at f_{sw}>20KHz
- Resonant inverters up to 100KHz
- Electronic Welders at f_{sw}>20KHz

Application

- Welding inverters

Advantages

- Space and weight savings
- Reduced protection circuits

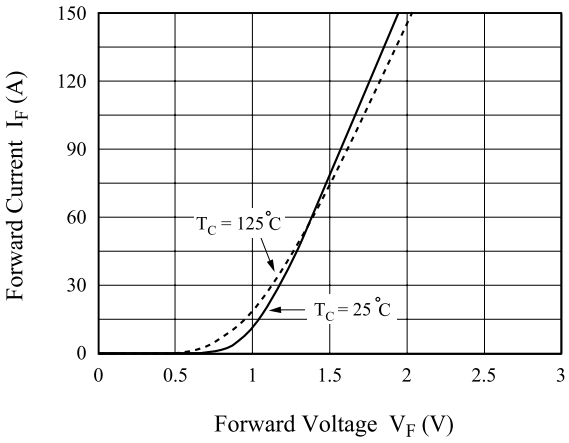

Fig 1. Forward Characteristics

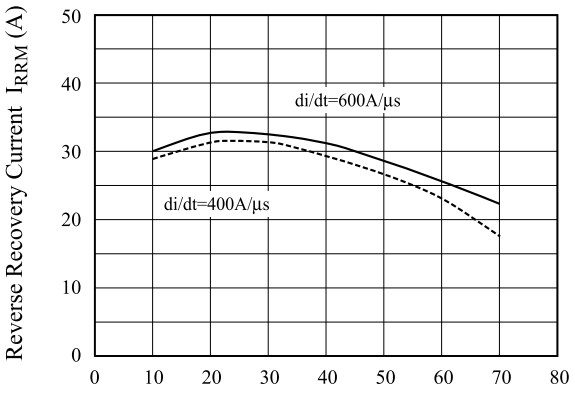

Fig 2. Reverse Recovery Current

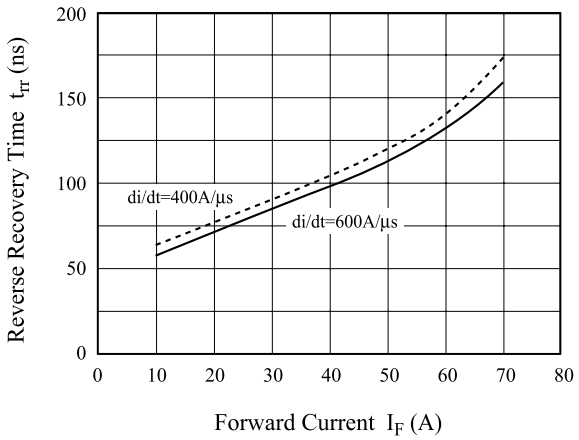

Fig 3. Reverse Recovery Time

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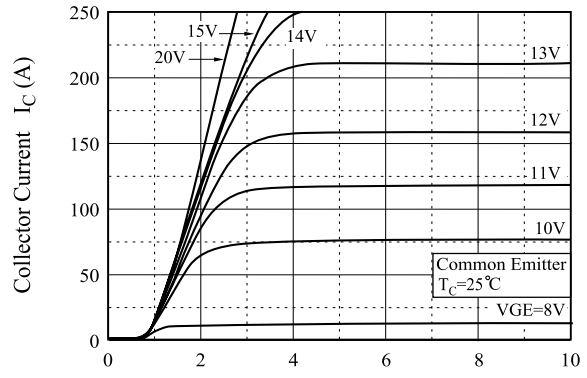

Fig 4. Saturation Voltage Characteristics

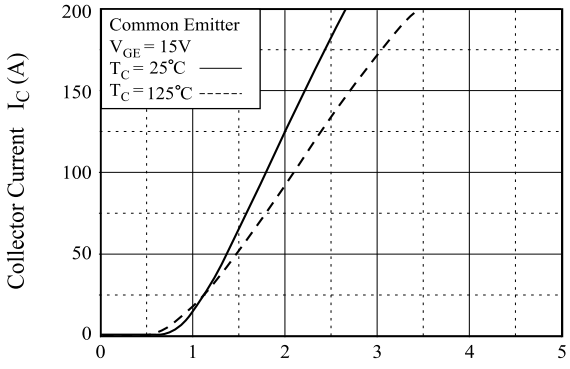

Fig 5. Saturation Voltage Characteristics

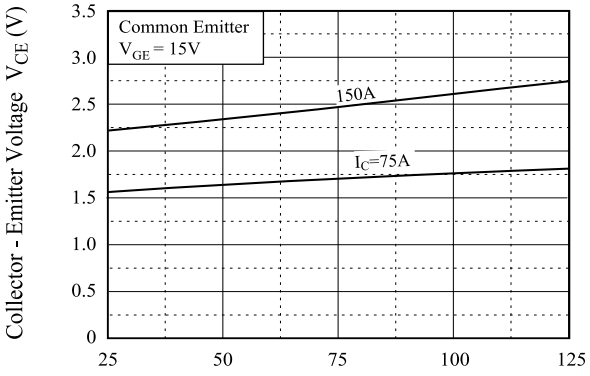

Fig 6. Saturation Voltage vs. Case Temperature

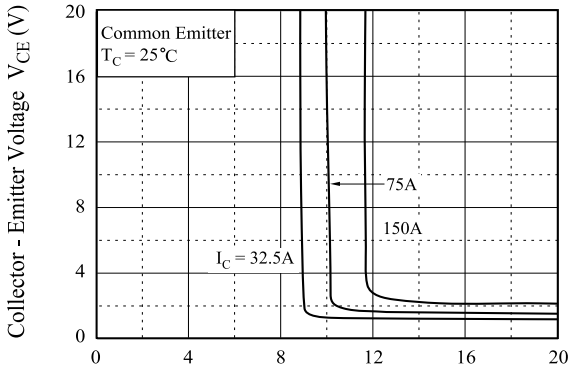

Fig 7. Saturation Voltage vs. V_{GE}

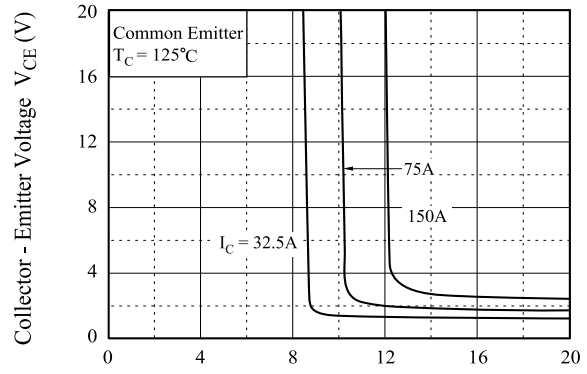

Fig 8. Saturation Voltage vs. V_{GE}

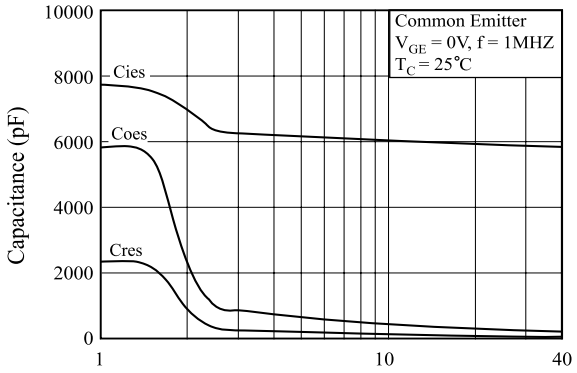

Fig 9. Capacitance Characteristics

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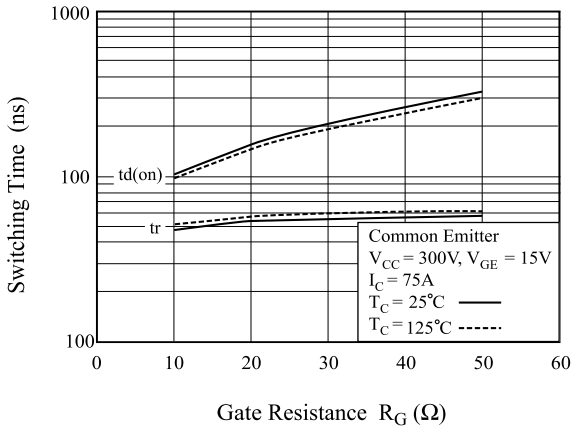

Fig 10. Turn-On Characteristics vs. Gate Resistance

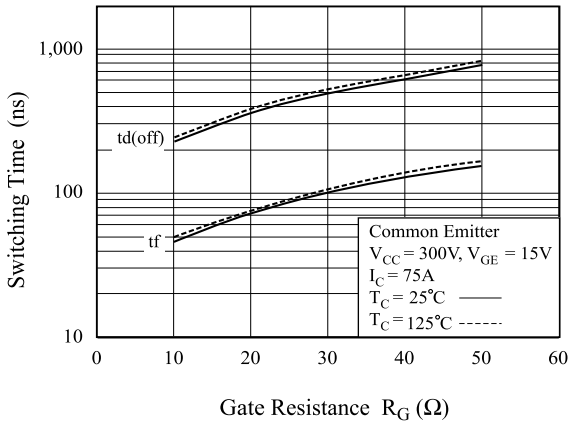

Fig 11. Turn-Off Characteristics vs. Gate Resistance

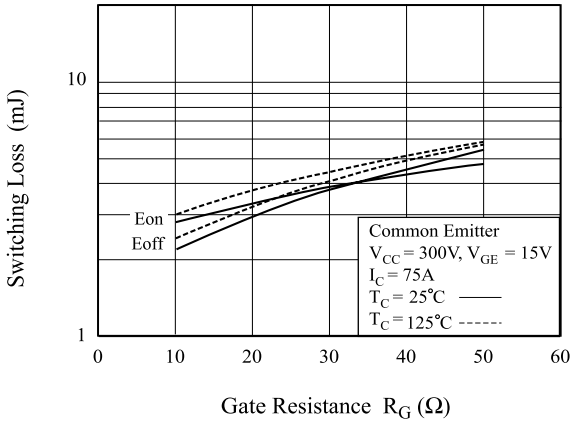

Fig 12. Switching Loss vs. Gate Resistance

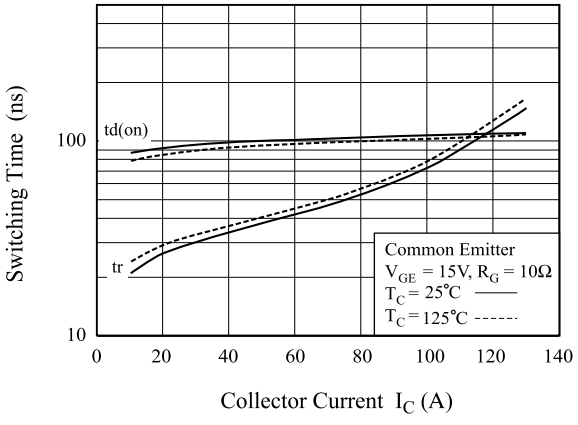

Fig 13. Turn-On Characteristics vs. Collector Current

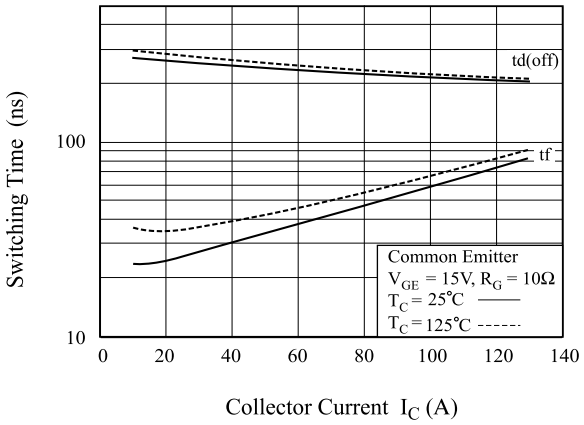

Fig 14. Turn-Off Characteristics vs. Collector Current

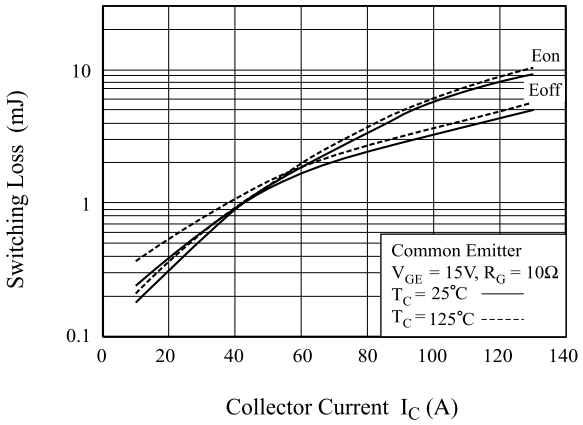

Fig 15. Switching Loss vs. Collector Current

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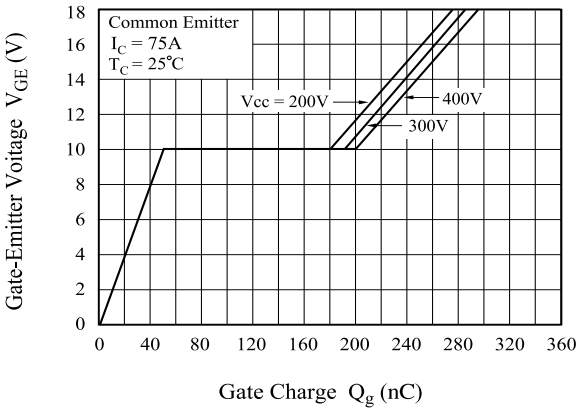


Fig 16.Gate Charge Characteristics

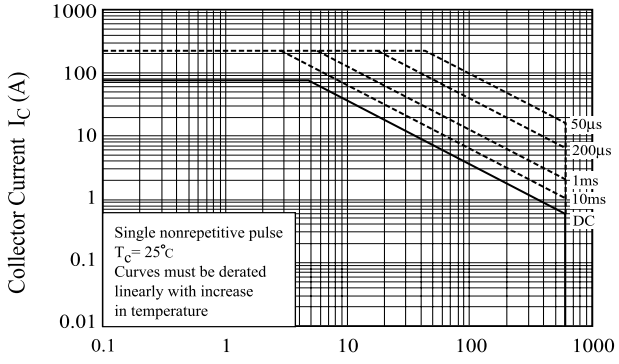


Fig 17. SOA Characteristics

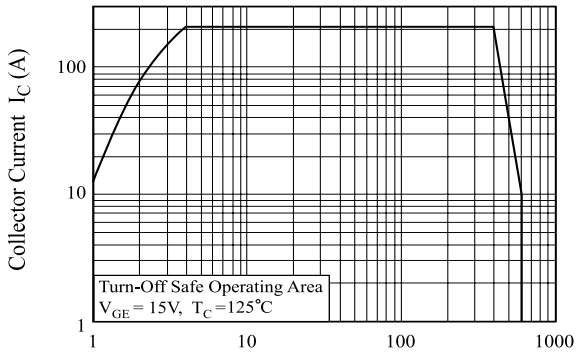
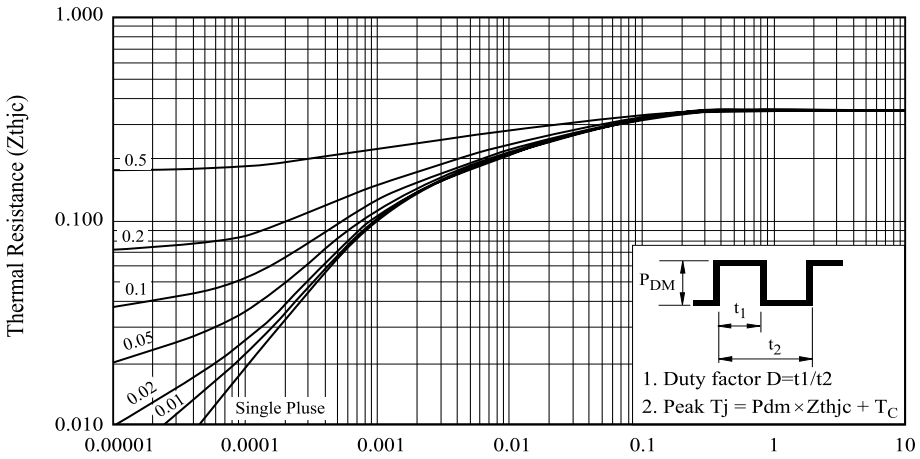


Fig 18. Turn-Off SOA

g



Fi 19. Transient Thermal Impedance of IGBT

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