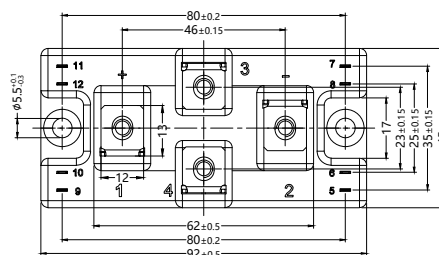
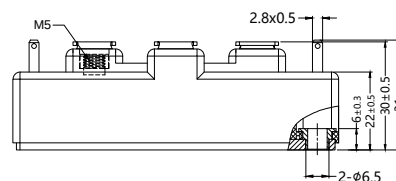


S4G25T120SC9

H bridge IGBT modules



Dimension: mm

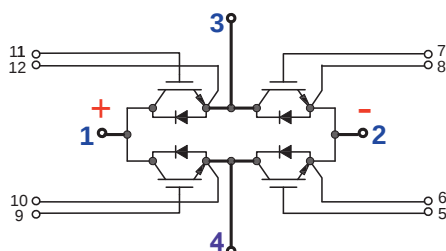


$V_{CES} = 1200V$

$I_{C100} = 4 \times 25A$

$V_{CESat(typ)} = 2.00V$

$E_{off(typ)} = 0.65mJ$



Absolute Maximum Ratings

Symbol	Test Conditions		Values	Unit
IGBT				
V _{CES}	T _j =25°C		1200	V
I _C	T _j = 175 °C	T _C =25°C	50	A
		T _C =80°C	25	A
I _{Cnom}	T _C = 100 °C Every chip		25	A
I _{CRM}	I _{CRM} = 3xI _{Cnom}		75	A
V _{GES}			-20 ... +20	V
tpsc	V _{CC} = 600 V V _{GE} ≤ 15 V V _{CES} ≤ 1200 V	T _j =150°C	10	μs
T _j			-40 ... +150	°C
Inverse diode				
I _F	T _j = 175 °C	T _C =25°C	40	A
		T _C =80°C	20	A
I _{Fnom}			40	A
I _{FRM}	I _{FRM} = 3xI _{Fnom}		120	A
I _{FSM}	t _p = 10 ms, sin 180°, T _j =25°C		90	A
T _j			-40 ... +150	°C
Module				
I _{t(RMS)}	T _{terminal} =80°C		125	A
T _{stg}			-40 ... 125	°C
V _{Isol}	AC sinus 50 Hz, t = 1 min		4000	V

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H bridge IGBT modules

Characteristics						
Symbol	Test Conditions		min.	typ.	max.	Unit
IGBT						
V _{CE(sat)}	I _C =25A V _{GE} =15V chip level	T _j =25°C	2.00		2.45	V
		T _j =150°C	2.60			V
V _{CE0}	chiplevel	T _j =25°C	0.8		0.9	V
		T _j =150°C	0.7		0.8	V
r _{CE}	V _{GE} =15V	T _j =25°C	14.00		16.00	mΩ
	chiplevel	T _j =150°C	21.00		22.00	mΩ
V _{GE(th)}	V _{GE} =V _{CE} , I _C = 1.7 mA		5	5.8	6.5	V
I _{CES}	V _{GE} =0V	T _j =25°C			0.1	mA
	V _{CE} = 1200 V	T _j =150°C			1	mA
C _{ies}	V _{CE} =25V V _{GE} =0V	f=1MHz	1.80			nF
C _{oes}		f=1MHz	0.07			nF
C _{res}		f=1MHz	0.045			nF
Q _G	V _{GE} = - 8 V...+ 15 V		140			nC
R _{Gint}	T _j =25°C		4.0			Ω
t _{d(on)}	V _{CC} = 600 V I _C =25A V _{GE} =±15V R _{Gon} =1Ω R _{Goff} =1Ω di/dt _{on} = 1700 A/μs di/dt _{off} =670A/μs	T _j =25°C	61			ns
t _r		T _j =25°C	22			ns
E _{on}		T _j =25°C	3.3			mJ
t _{d(off)}		T _j =25°C	295			ns
t _f		T _j =25°C	94			ns
E _{off}		T _j =25°C	0.65			mJ
R _{th(j-c)}	per IGBT				0.66	K/W



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H bridge IGBT modules

Characteristics						
Symbol	Test Conditions		min.	typ.	max.	Unit
Inverse diode						
V _F = V _{EC}	I _F = 20 A	T _j = 25 °C	1.90	2.54		V
	V _{GE} = 0 V chiplevel	T _j = 150 °C	2.08	2.60		V
V _{F0}	chiplevel	T _j = 25 °C	1.3	1.5		V
		T _j = 150 °C	0.9	1.1		V
r _F	chiplevel	T _j = 25 °C	18.0	20.0		mΩ
		T _j = 150 °C	25.0	28.0		mΩ
I _{RRM}	I _F = 20 A di/dt _{off} = 1380 A/μs	T _j = 150 °C	20			A
Q _{rr}	V _{GE} = ±15 V	T _j = 150 °C	8.0			μC
E _{rr}	V _{CC} = 600 V	T _j = 150 °C	3.0			mJ
R _{th(j-c)}	per diode		0.88			K/W
Module						
L _{CE}			30			nH
R _{CC'+EE'}	terminal-chip	T _C = 25 °C	0.65			mΩ
		T _C = 125 °C	1			mΩ
R _{th(c-s)}	per module		0.06		0.07	K/W
M _s	to heat sink M5		3	5		Nm
M _t		to terminals M5	2.5	5		Nm
						Nm
Weight			170			g

S4G25T120SC9

H bridge IGBT modules

Features

- Trench Field Stop technology
- Ultra fast free wheeling diodes technology
- Low switching losses
- Switching frequency up to 30KHz
- Positive temperature coefficient for easy paralleling
- MOS input, voltage controlled

Application

- AC and DC motor control
- AC servo and robot drives
- Power supplies
- Welding inverters

Advantages

- space and weight savings
- reduced protection circuits

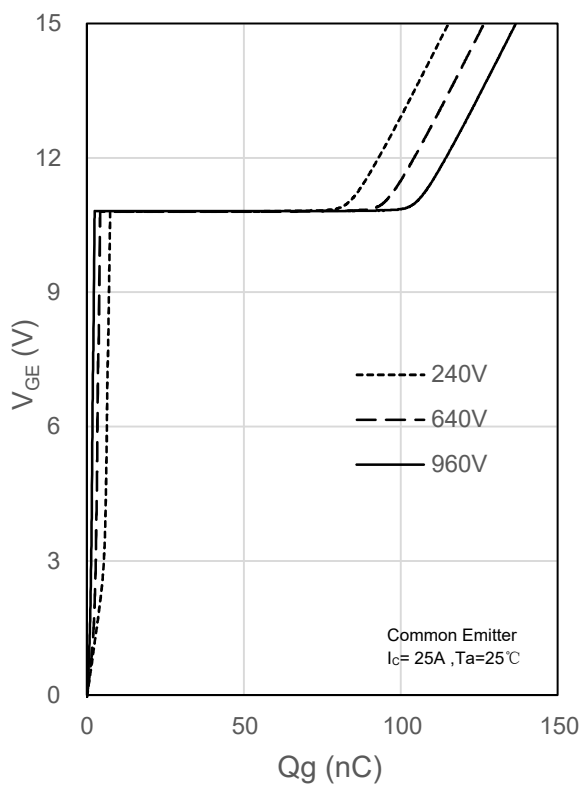


Fig. 1 Gate charge characteristics

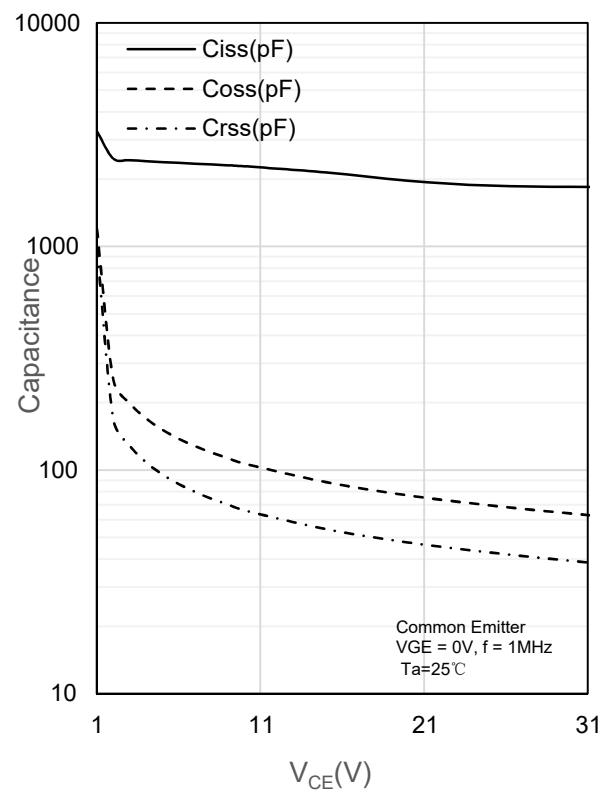


Fig. 2 Capacitance characteristics

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H bridge IGBT modules

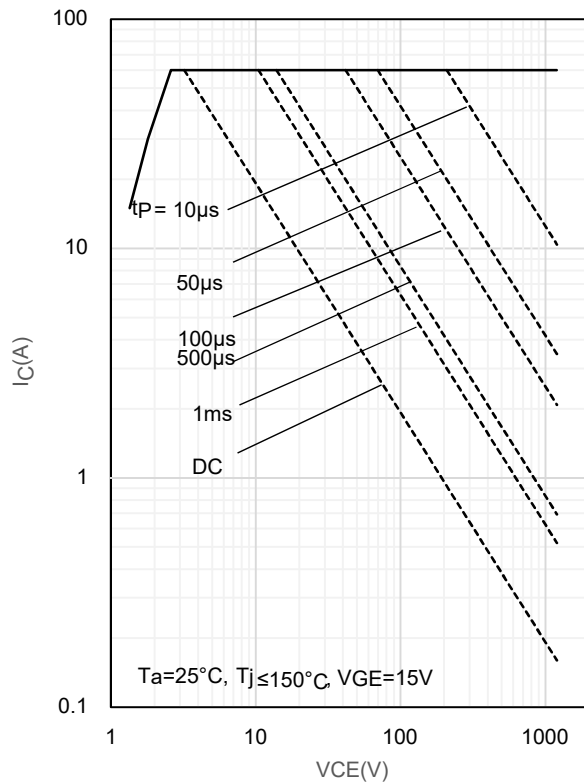


Fig. 3 FBSOA characteristics

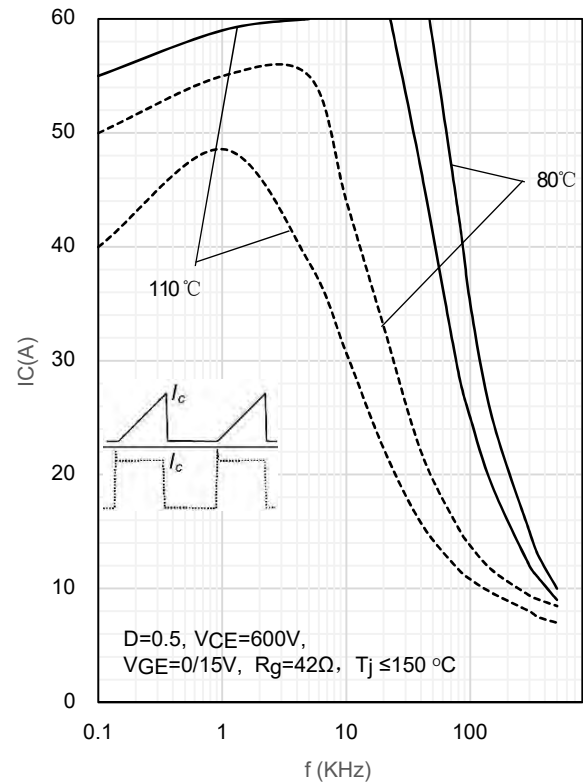


Fig. 4 Load Current vs. Frequency

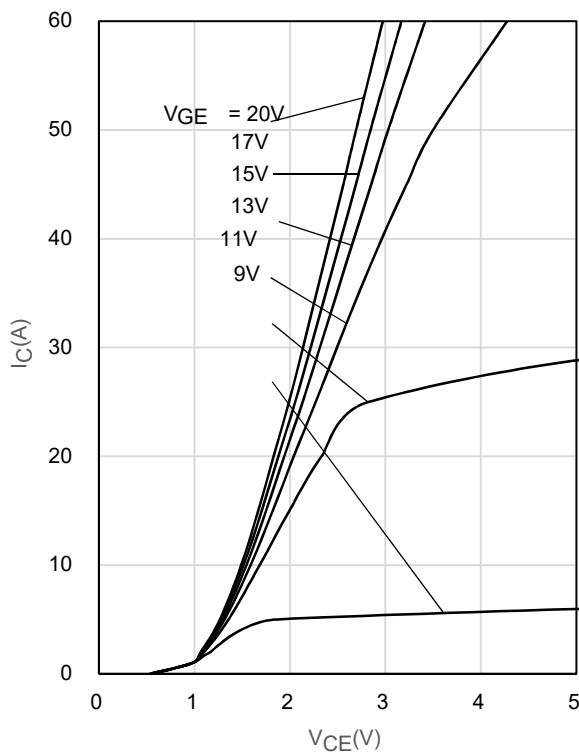


Fig. 5 Output characteristics

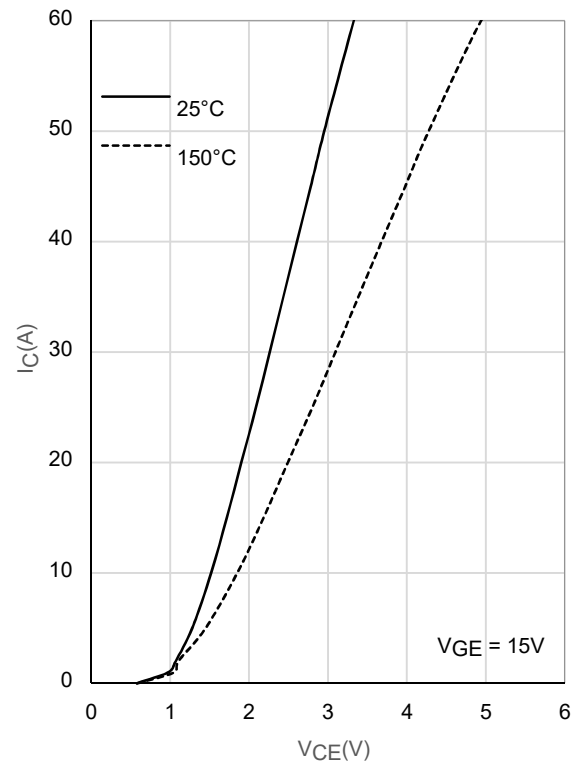


Fig. 6 Saturation voltage characteristics

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H bridge IGBT modules

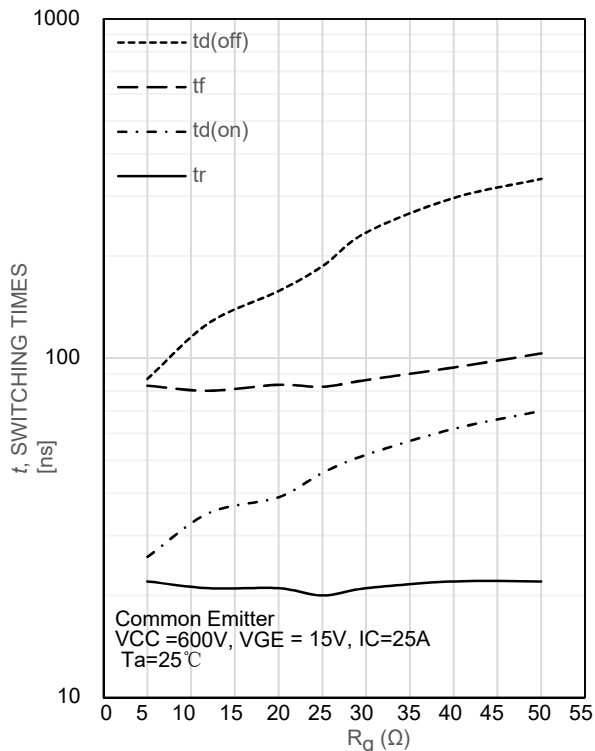


Fig. 7 Switching times vs. gate resistor

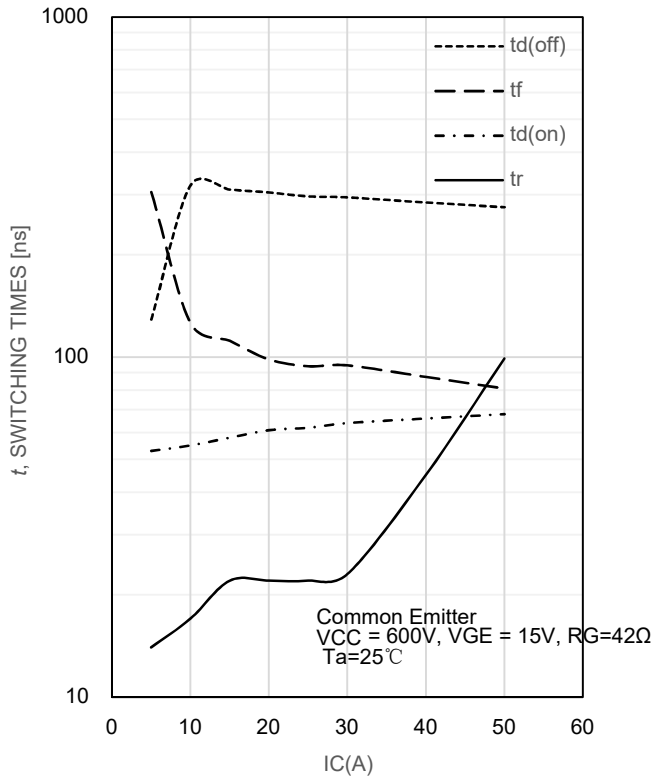


Fig. 8 Switching times vs. collector current

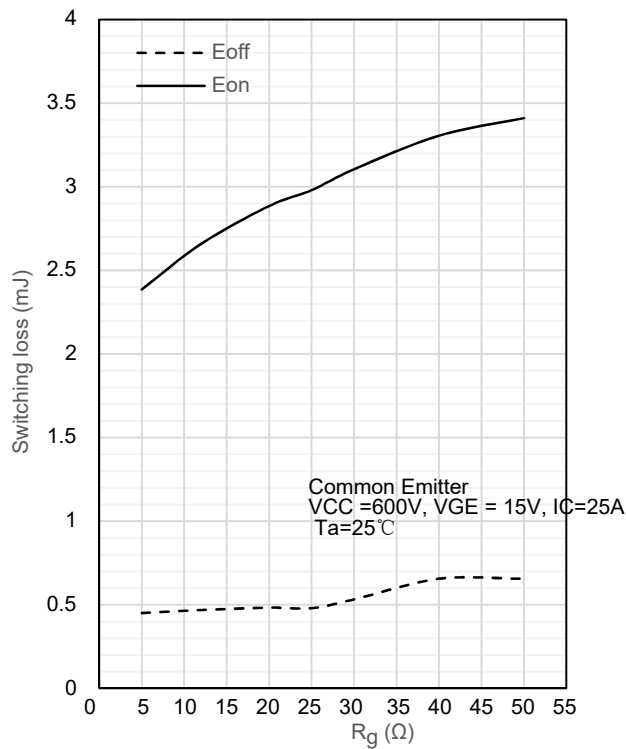


Fig. 9 Switching loss vs. gate resistor

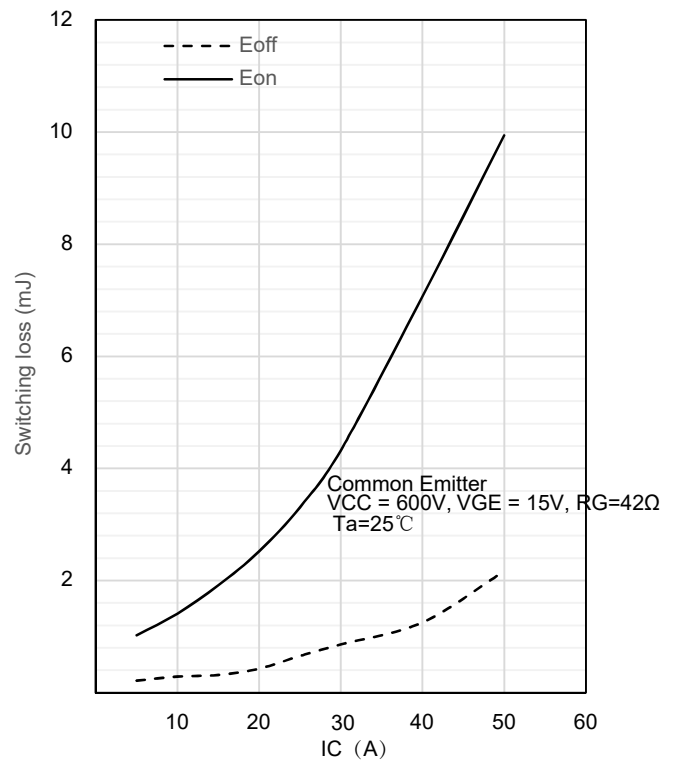


Fig. 10 Switching loss. collector current