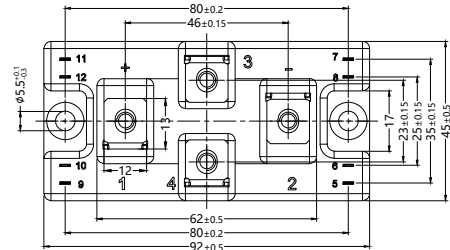
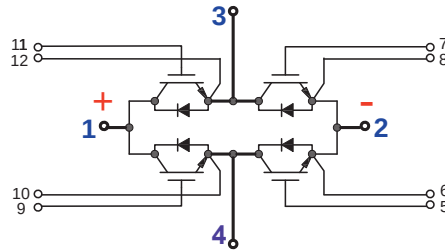
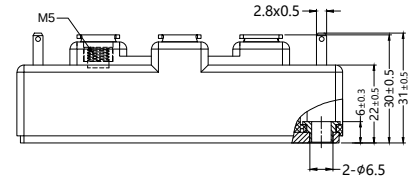


S4G25T120SC9

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 _{Chom}	T _C = 100 °C Every chip		25	A
I _{CRM}	I _{CRM} = 3xI _{Chom}		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	$T_j = 175^\circ C$	$T_c = 25^\circ C$	40	A
		$T_c = 80^\circ C$	20	A
I_{Fnom}			40	A
I_{FRM}	$I_{FRM} = 3 \times I_{Fnom}$		120	A
I_{FSM}	$t_p = 10 ms, \sin 180^\circ, T_j = 25^\circ C$		90	A
T_j			-40 ... +150	$^\circ C$

Module

$I_{t(RMS)}$	$T_{terminal} = 80^\circ C$	125	A
T_{stg}		-40 ... 125	$^\circ C$
V_{isol}	AC sinus 50 Hz, $t = 1 min$	4000	V

Sirectifier®

S4G25T120SC9

H bridge IGBT modules

Characteristics						
Symbol	Test Conditions		min.	typ.	max.	Unit
IGBT						
V _{CE(sat)}	I _C =25A V _{GE} =15V	T _j =25°C		2.00	2.45	V
	chip level	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



S4G25T120SC9

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

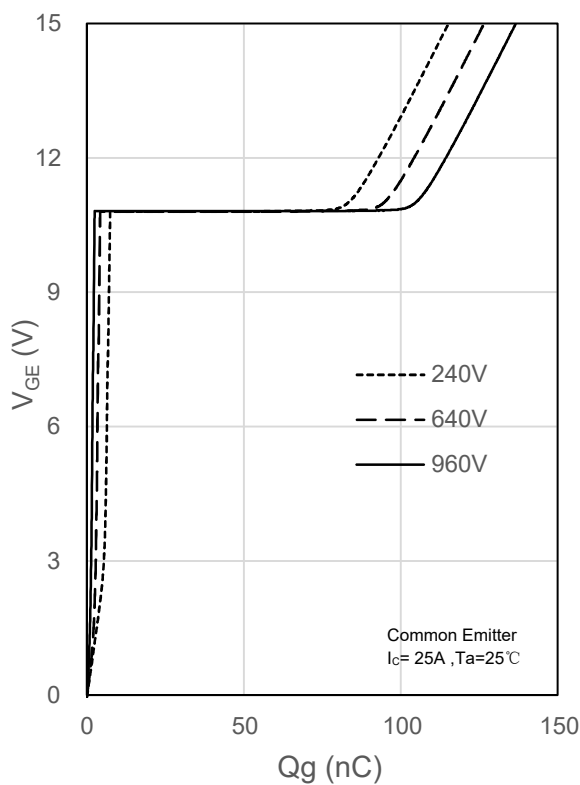


Fig. 1 Gate charge characteristics

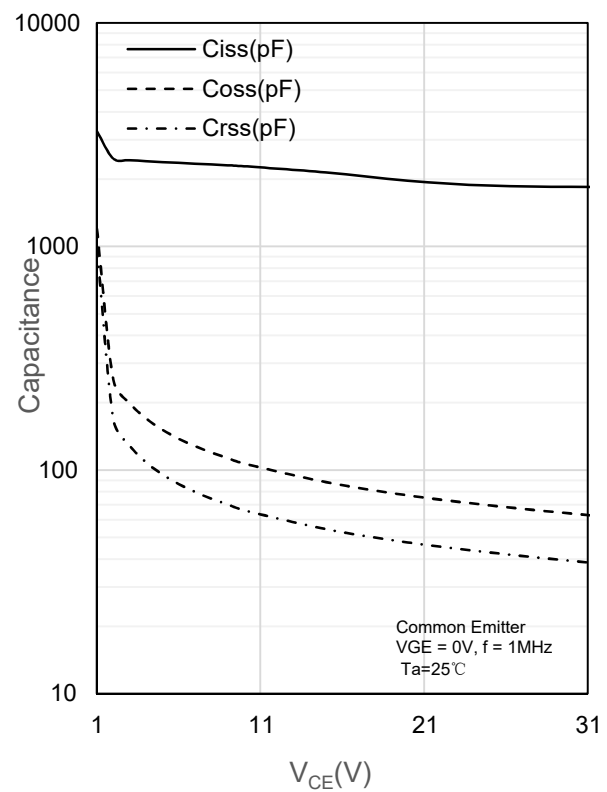


Fig. 2 Capacitance characteristics

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H bridge IGBT modules

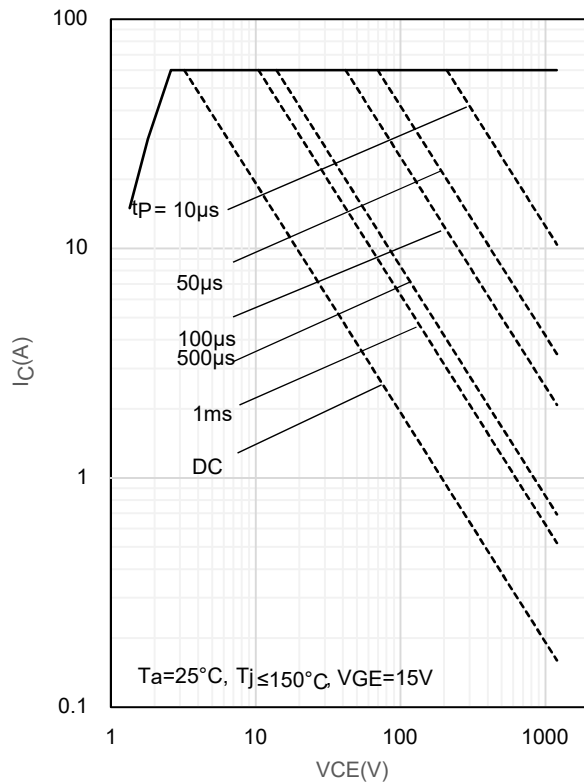


Fig. 3 FBSOA characteristics

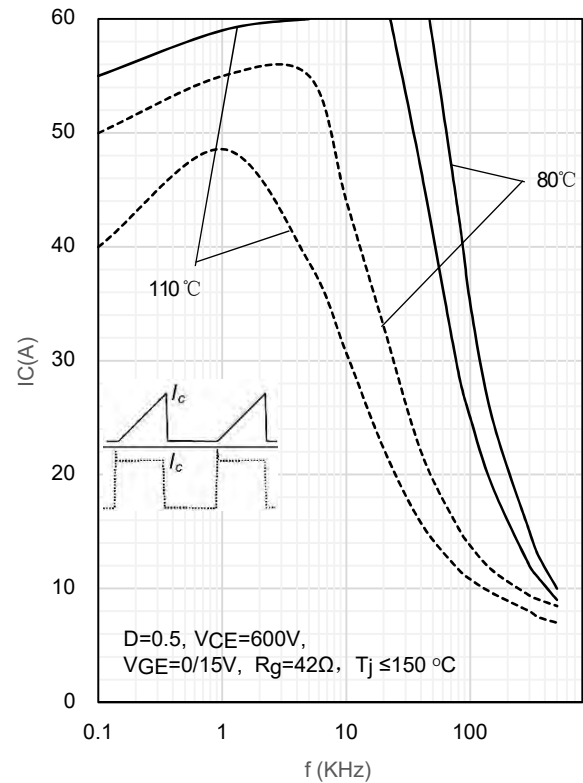


Fig. 4 Load Current vs. Frequency

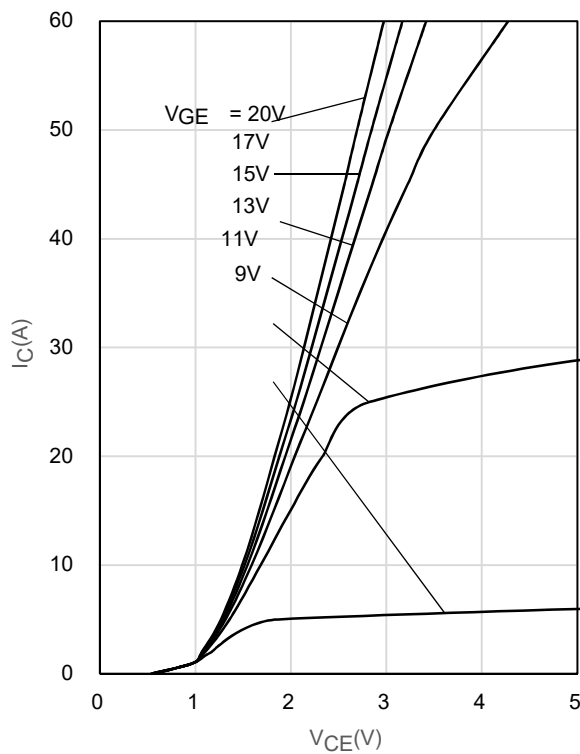


Fig. 5 Output characteristics

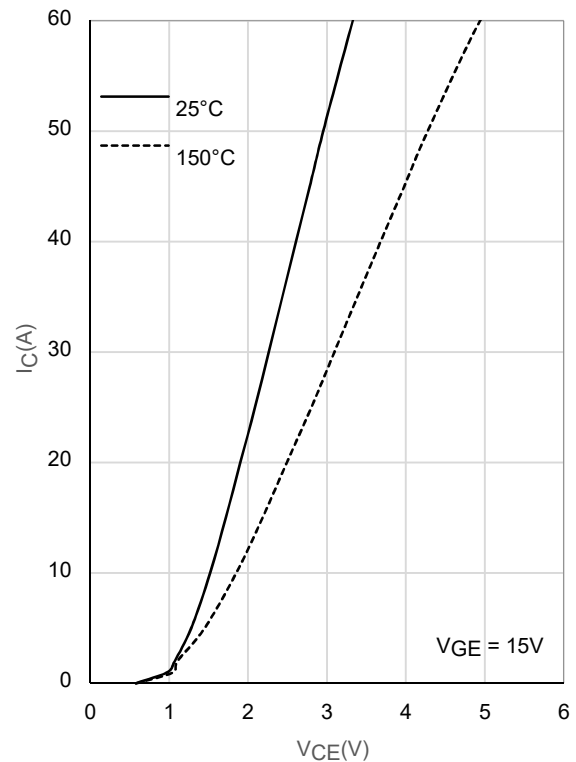


Fig. 6 Saturation voltage characteristics

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H bridge IGBT modules

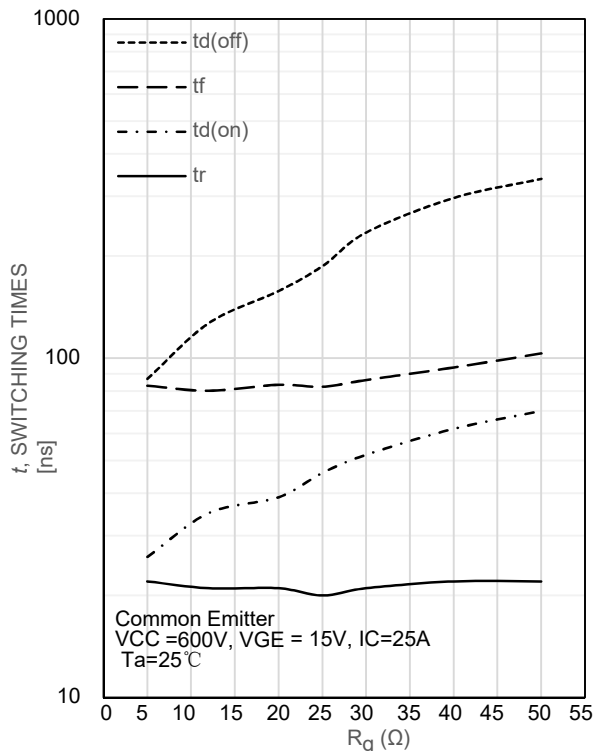


Fig. 7 Switching times vs. gate resistor

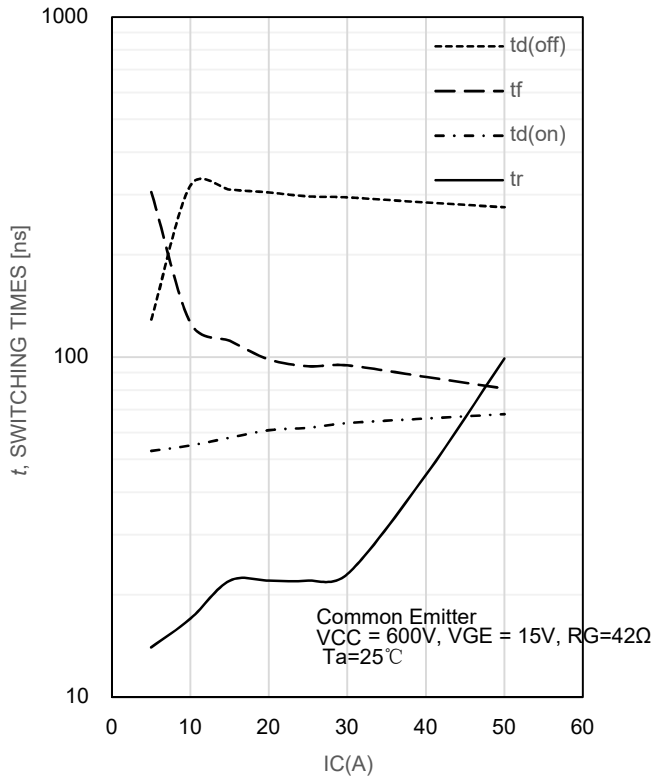


Fig. 8 Switching times vs. collector current

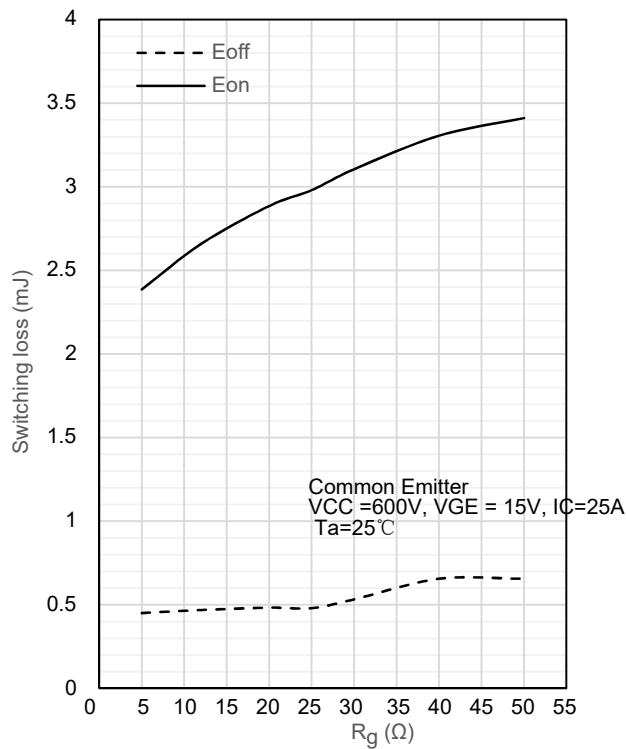


Fig. 9 Switching loss vs. gate resistor

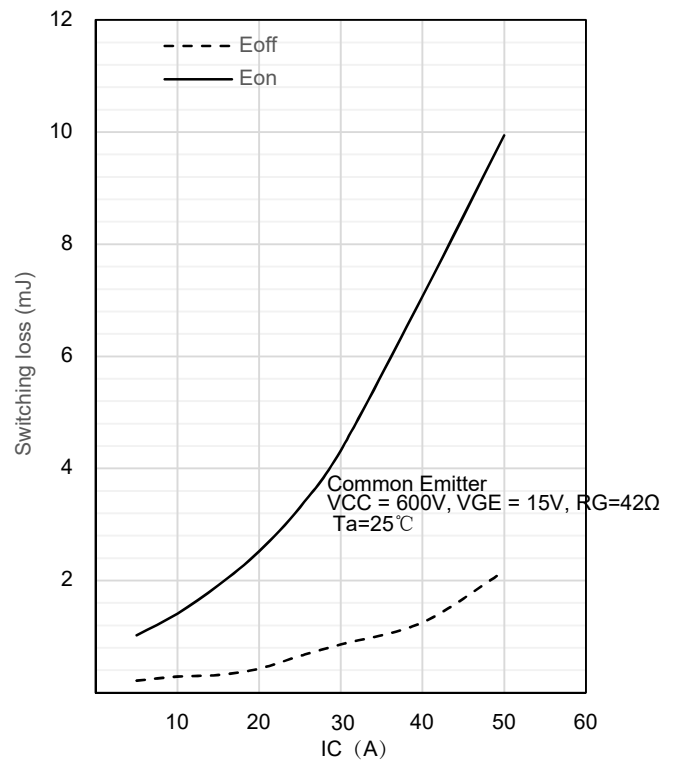


Fig. 10 Switching loss. collector current