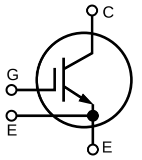
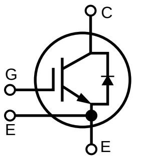
SG100T60DS

Discrete IGBTs

SG100T60S

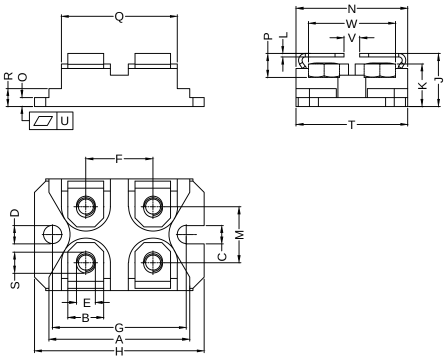


SG100T60DS



G=Gate
C=Collector
E=Emitter

Dimensions SOT-227(ISOTOP)



Dim.	Millimeter		Dim.	Millimeter	
	Min.	Max.		Min.	Max.
A	31.30	31.62	M	12.20	14.00
B	7.80	8.20	N	25.15	25.62
C	4.09	4.29	O	1.98	2.13
D	4.09	4.29	P	4.15	4.62
E	4.09	4.29	Q	25.90	26.30
F	14.91	15.11	R	3.94	4.42
G	30.12	30.30	S	4.45	4.85
H	38.20	38.56	T	24.59	25.07
J	12.30	12.90	U	0.05	0.10
K	8.92	9.60	V	3.00	4.80
L	0.76	0.84	W	19.81	21.08

T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		600	V
I_C	T_C= 25(100)°C	200(100)	A
I_{CRM}	T_C= 25°C, t_P =1ms	200	A
V_{GES}		±20	V
T_{Vj}		-40...+175	°C
Inverse Diode			
$I_F = -I_C$	T_C= 25(100)°C	200(100)	A
I_{FRM}	T_C= 25°C, t_P =1ms	200	A
I_{FSM}	t_P =10ms; sin180° ; T_j=25°C	200	A
V_{RRM}		600	V
Module			
$I_{t(RMS)}$	$T_{terminal}$ = 100°C	100	A
T_{stg}		-40~125	°C
V_{Isol}	AC, 1min	4000	V

Features

- Trench FS IGBT technology
- Standard SOT-227 package style
- Low switching losses
- Switching frequency up to 30kHz
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy parallelling
- MOS input, voltage controlled
- Soft switching diode Technology
- Package with copper baseplate
- Isolation voltage 4000 V

Application

- Inverter welding Machines
- UPS
- AC inverter Drives

Advantages

- spaceand weight savings
- reduced protectioncircuits

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Characteristics T_C = 25°C, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	V_{CE} =20 V, I_C =3mA	5.0	5.5	6.5	V
I_{CES}	V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25°C			0.20	mA
$V_{CE(TO)}$	T_j = 25°C		0.8	0.9	V
r_{CE}	V_{GE} = 15V, T_j = 25(150)°C		3.2(4.5)	3.6(4.9)	mΩ
$V_{CE(sat)}$	I_C =100A; V_{GE} = 15V; chip level		1.75	1.90	V
C_{ies}	under following conditions		8.20		nF
C_{oes}	V_{GE} = 0, V_{CE} = 25V, f = 1MHz		1.10		nF
C_{res}			0.15		nF
L_{CE}				30	nH
$R_{CC'+EE'}$	res., terminal-chip T_C = 25(125)°C		0.65(1.09)		mΩ
$t_{d(on)}$	under following conditions: V_{CC} = 300V,		100		ns
t_r	I_C = 100A		40		ns
$t_{d(off)}$	R_{Gon} = R_{Goff} = 33Ω , T_j = 150°C		310		ns
t_f	V_{GE} = ± 15V		62		ns
$E_{on}/E_{off}/E_{ts}$			1.02/1.34/2.36		mJ
Inverse Diode	under following conditions: I_F =100A;				
$V_F = V_{EC}$	V_{GE} = 0V; T_j = 25°C		1.70		V
$V_{(FO)}$	T_j = 25(125)°C		1.2(0.90)	1.4(1.1)	V
r_F	T_j = 25(125)°C		17(24)	21 (27)	mΩ
I_{RM}	I_F = 100A; T_j = 125°C		5.6		A
Q_{rr}	di/dt = 100A/us		0.15		uC
E_{rr}	V_{GE} =±15V		0.9		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.38	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.92	K/W
$R_{th(c-s)}$	per module			0.27	K/W
Mechanical Data					
M_s	to heatsink M4		1.5		Nm
M_t	to terminals M4		1.5		Nm
Weight	typical		30		g

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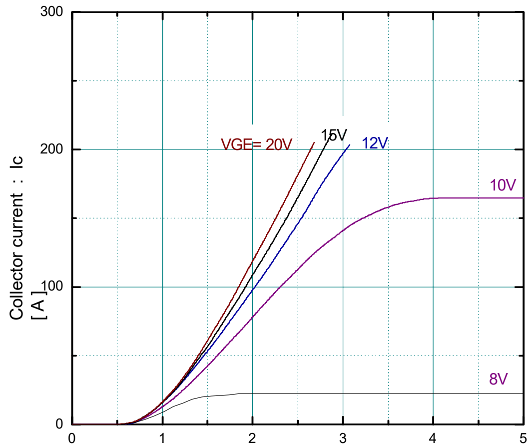

Fig.1 Collector current vs. Collector-Emitter voltage
Tj= 25℃ (typ.)

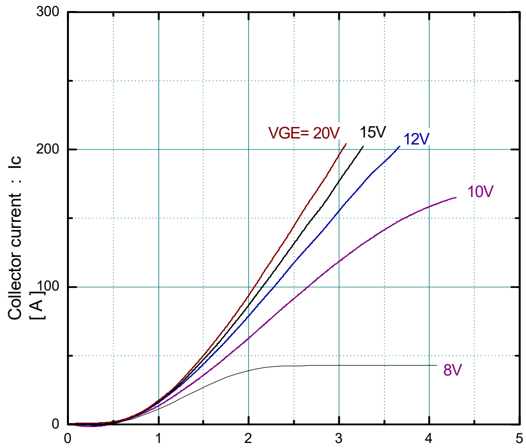

Fig.2 Collector current vs. Collector-Emitter voltage
Tj= 125℃ (typ.)

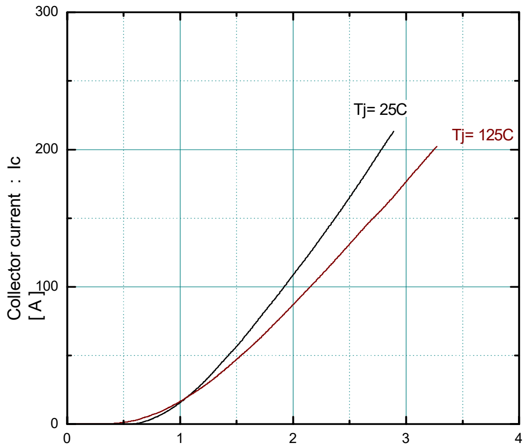

Fig.3 Collector current vs. Collector-Emitter voltage
VGE=15V (typ.)

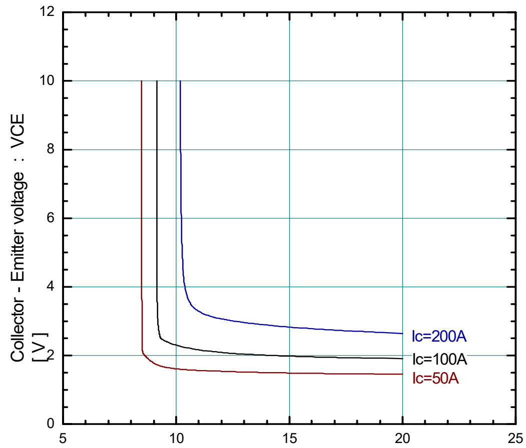

Fig.4 Collector-Emitter voltage vs. Gate-Emitter voltage
Tj= 25℃ (typ.)

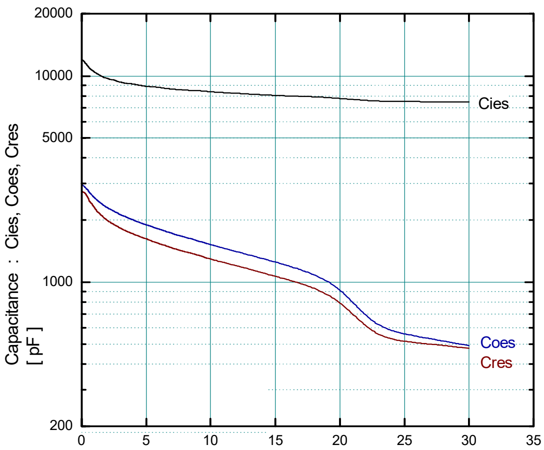

Fig.5 Capacitance vs. Collector-Emitter voltage (typ.)
VGE=0V, f= 1MHz, Tj= 25℃

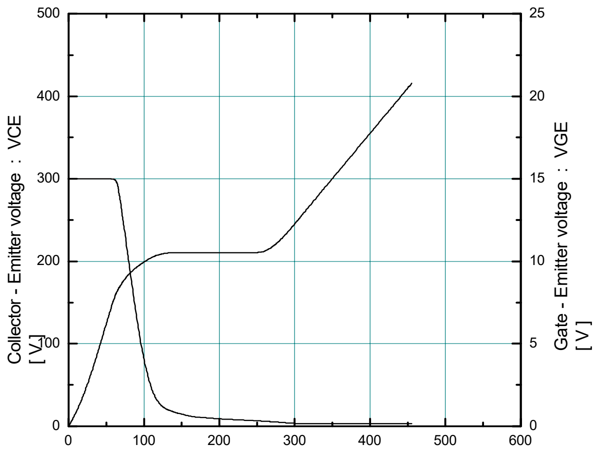

Fig.6 Dynamic Gate charge (typ.)
Vcc=300V, Ic=100A, Tj= 25℃

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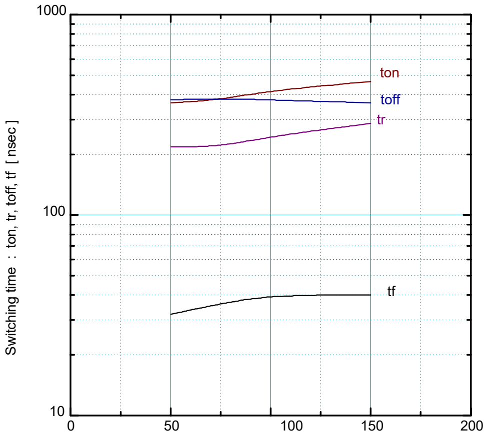
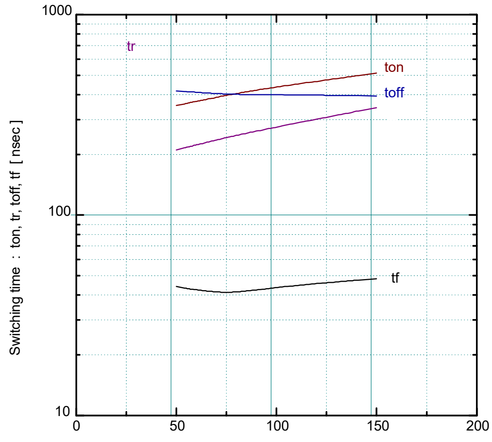
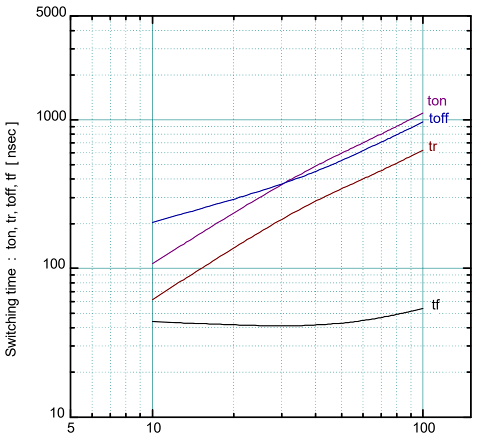


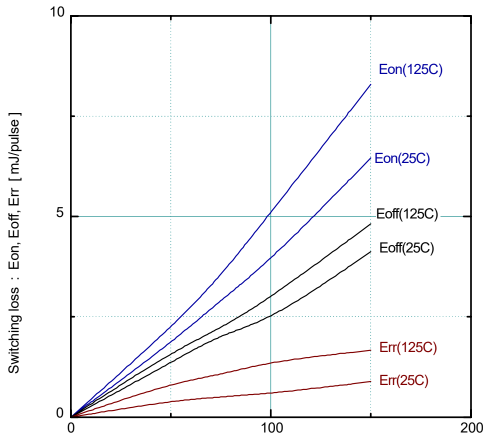
Collector current : Ic [A]
Fig. 7 Switching time vs. Collector current (typ.)
Vcc=300V, VGE=±15V, Rg=33Ω, Tj= 25℃



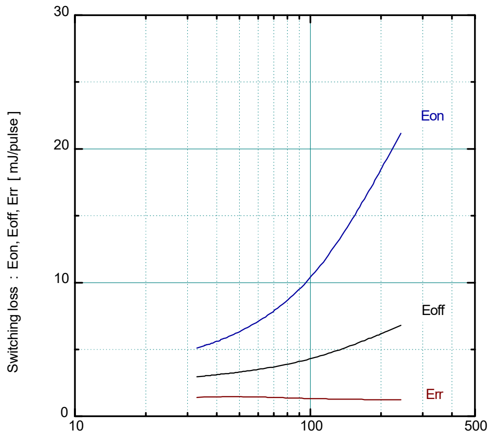
Collector current : Ic [A]
Fig.8 Switching time vs. Collector current (typ.)
Vcc=300V, VGE=±15V, Rg= 33Ω, Tj= 125℃



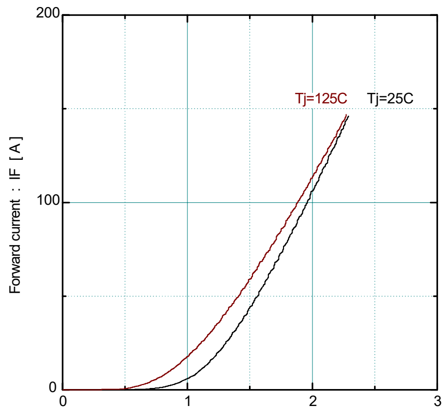
Gate resistance : Rg [ohm]
Fig.9 Switching time vs. Gate resistance (typ.)
Vcc=300V, Ic=100A, VGE=±15V, Tj= 25℃



Collector current : Ic [A]
Fig.10 Switching loss vs. Collector current
(typ.) Vcc=300V, VGE=±15V, Rg=33Ω



Gate resistance : Rg [ohm]
Fig.11 Switching loss vs. Gate resistance (typ.)
Vcc=300V, Ic=100A, VGE=±15V, Tj= 125℃



Forward on voltage : VF [V]
Fig.12 Forward current vs. Forward on voltage (typ.)

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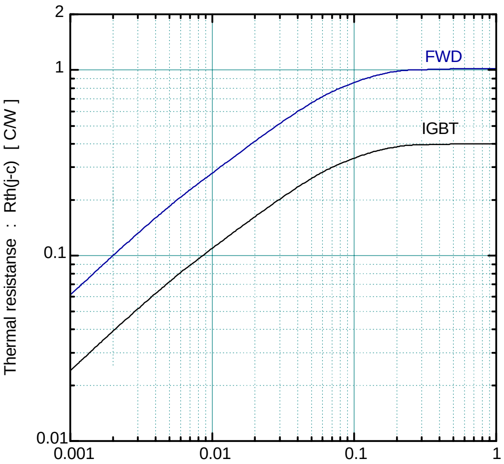
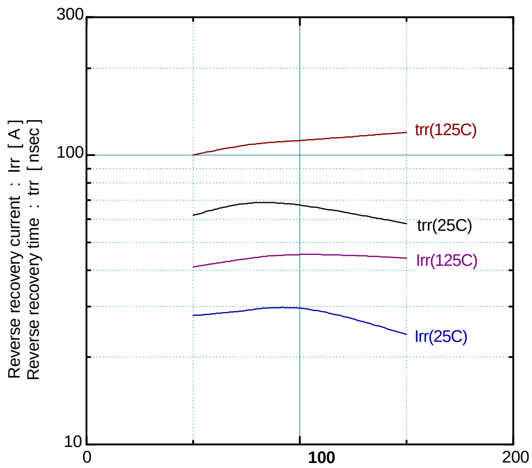


Pulse width : Pw [sec]
Fig.13 Transient Thermal resistance



Forward current : IF [A]
Fig.14 Reverse recovery characteristics (typ.)
Vcc=300V, VGE=±15V, Rg=33Ω

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