

MGD623S

July, 2009

■Features

- Low Saturation Voltage $V_{CE(sat)}=1.8V$ typ.
- High Speed $t_f=120ns$ typ.
- Low V_F FRD Included $V_F=1.2V$ typ.

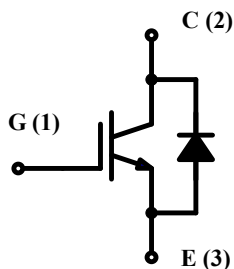
■Applications

- Current Resonance Inverter Switching
- Induction Heating Cooking

■Package----TO-3P



■Equivalent circuit



Absolute maximum ratings

(Ta=25°C)

Characteristic	Symbol	Rating	Unit
Collector to Emitter Voltage	V _{CES}	600	V
Gate to Emitter Voltage	V _{GES}	±30	V
Continuous Collector Current	I _C	50	A
Pulsed Collector Current	I _{C(pulse)} ¹⁾	100	A
Diode Continuous Forward Current	I _F	30	A
Diode pulsed Forward Current	I _{F(pulse)} ¹⁾	60	A
Maximum Power Dissipation	P _C	150 (T _c =25°C)	W
Thermal Resistance IGBT	θ _{j-c} IGBT	0.833	°C/W
Thermal Resistance Di	θ _{j-c} Di	1.67	°C/W
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55 to 150	°C

1) PW≤1ms, Duty cycle≤1%

Electrical characteristics

●IGBT

(Ta=25°C)

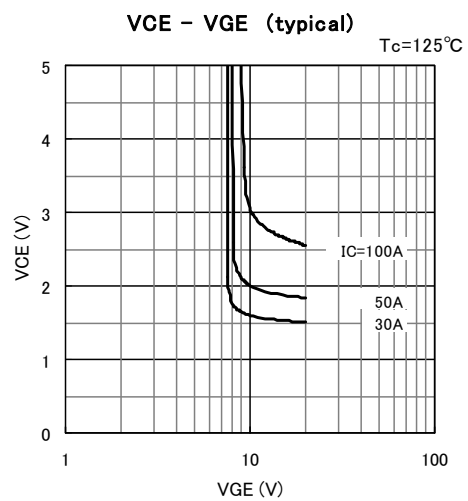
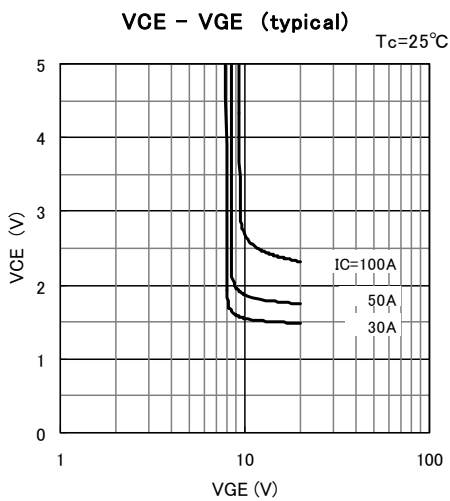
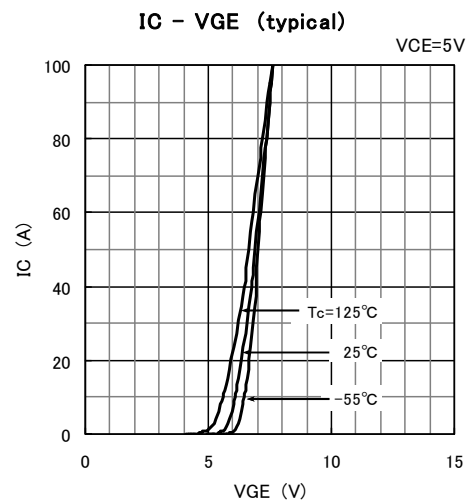
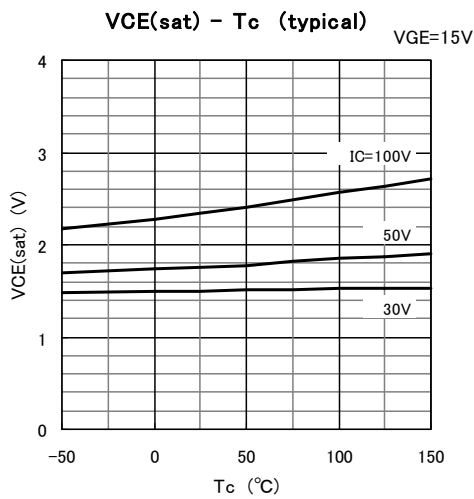
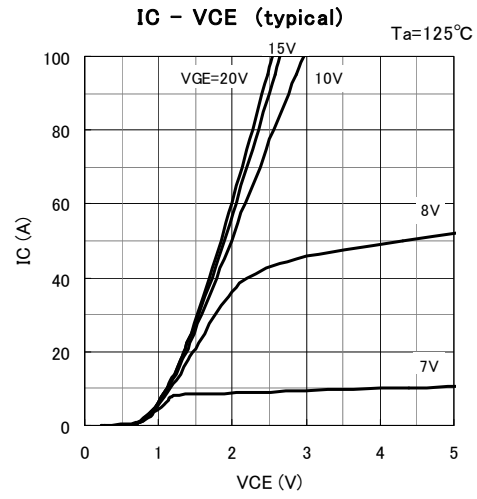
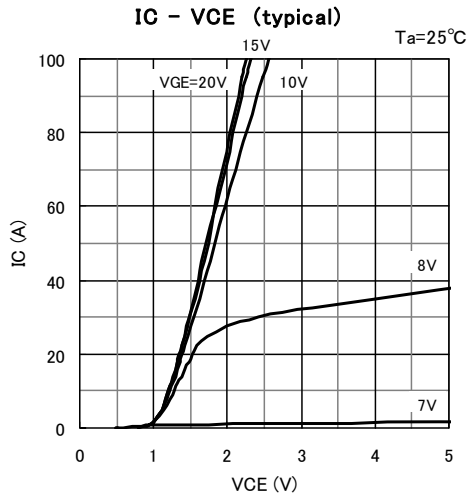
Characteristic	Symbol	Test Conditions	Limits			Unit
			MIN.	TYP.	MAX.	
Collector to Emitter Breakdown Voltage	V(BR)CES	IC=100μA, VGE=0V	600			V
Gate to Emitter Leakage Current	IGES	VGE=±30V			±500	nA
Collector to Emitter Leakage Current	ICES	VCE=600V, VGE=0V			100	μA
Gate Threshold Voltage	VGE(th)	VCE=10V, IC=1mA	3		6	V
Collector to Emitter Saturation Voltage	VCE(sat)	VGE=15V, IC=50A		1.8	2.4	V
Input Capacitance	Cies	VDS=20V VGS=0V f=1MHz		2500		pF
Output Capacitance	Coes			150		
Reverse Transfer Capacitance	Cres			80		
Turn-On Delay Time	td(on)	Inductive Load IC=50A VCC=300V VGS=15V, Rg=39Ω See Fig.1		75		ns
Rise Time	tr			100		
Turn-Off Delay Time	td(off)			300		
Fall Time	tf			120		

●Di

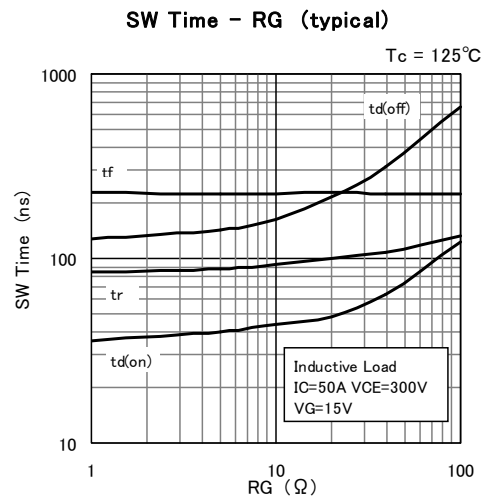
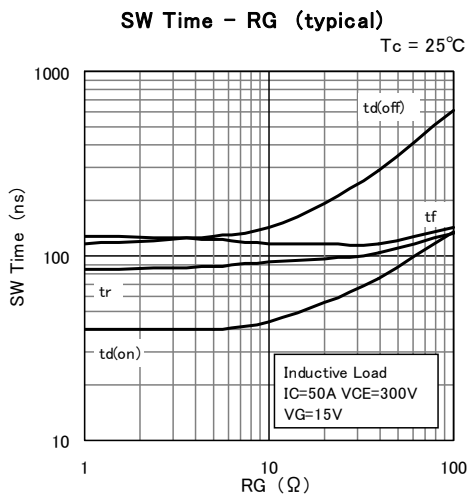
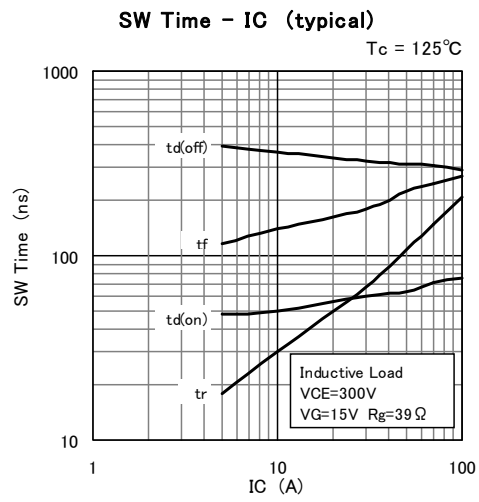
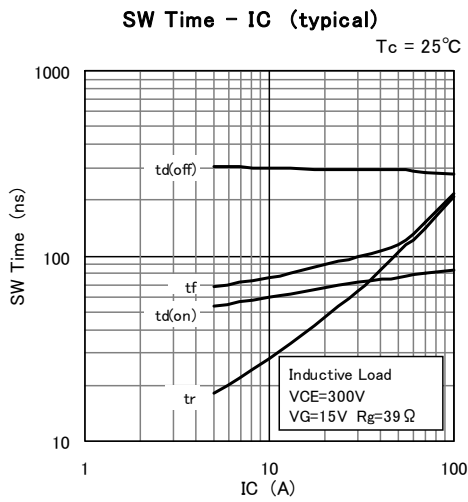
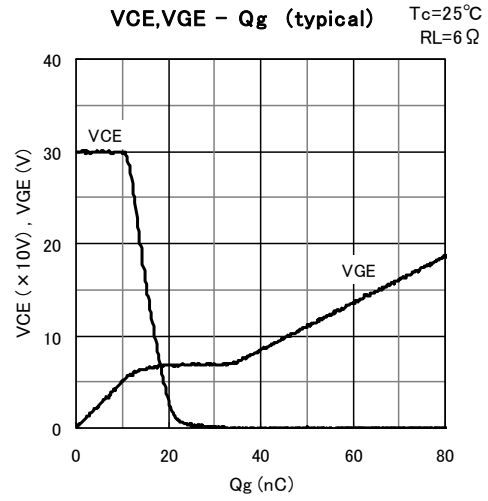
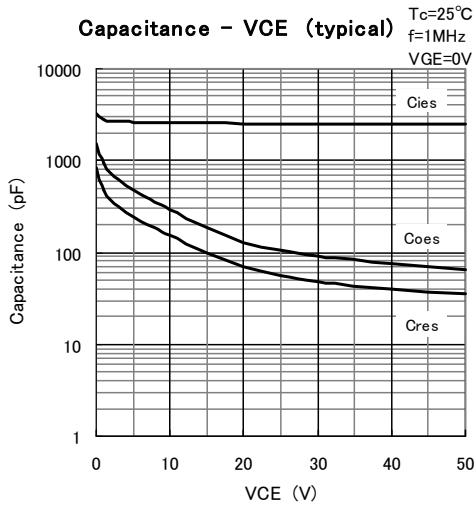
(Ta=25°C)

Characteristic	Symbol	Test Conditions	Limits			Unit
			MIN.	TYP.	MAX.	
Forward Voltage	VF	IF=30A		1.2	1.6	V
Reverse Recovery Time	trr	IF=30A di/dt=100A/μs		0.3		μs

Characteristic Curves

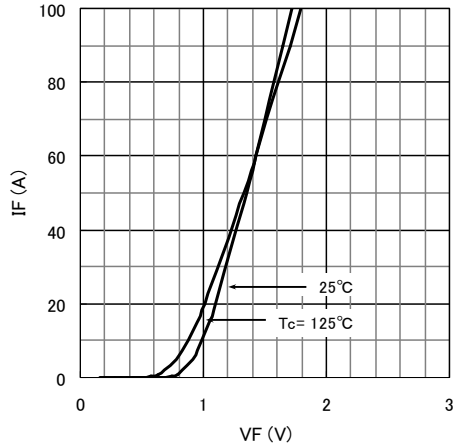


Characteristic Curves

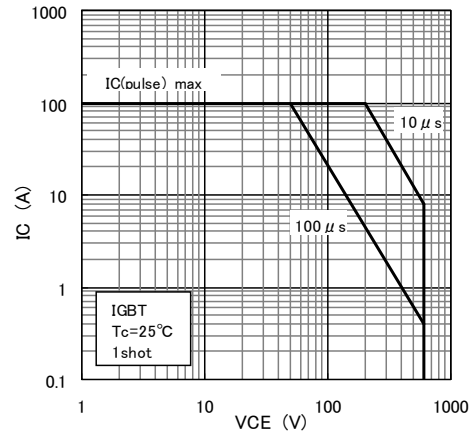


Characteristic Curves

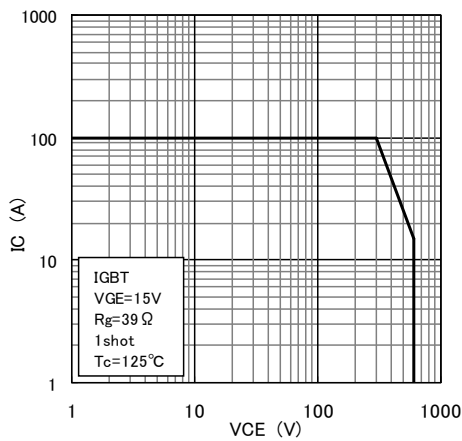
IF - VF (typical)



SAFE OPERATING AREA



Reverse Bias ASO



TRANSIENT THERMAL RESISTANCE - PULSE WIDTH

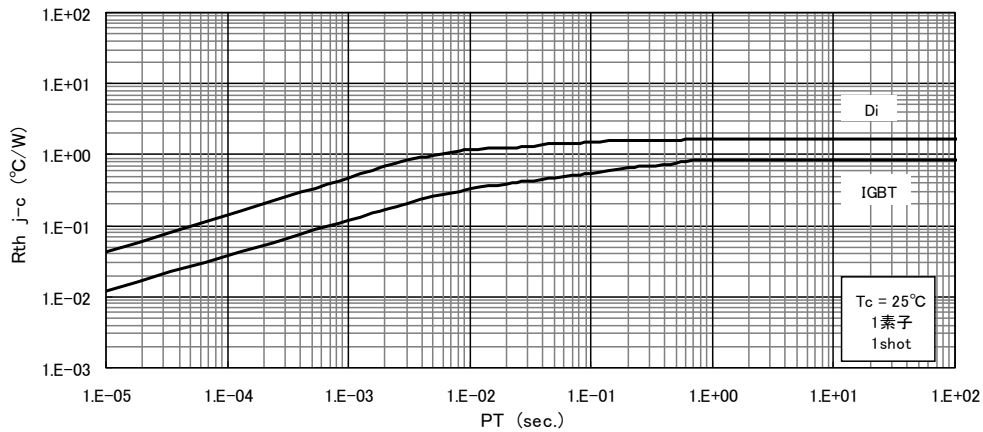
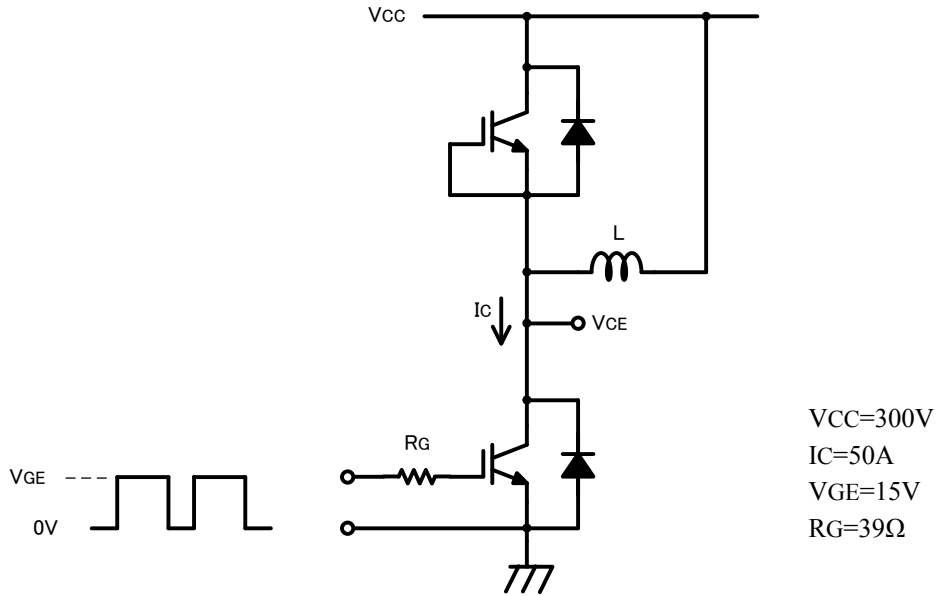
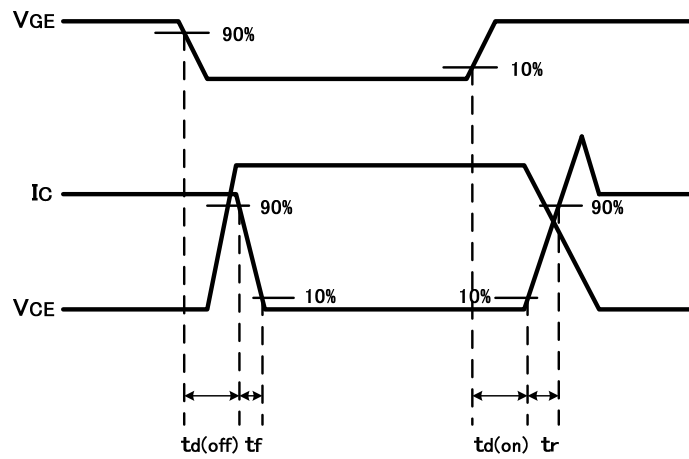


Fig.1 Switching Time Test Method



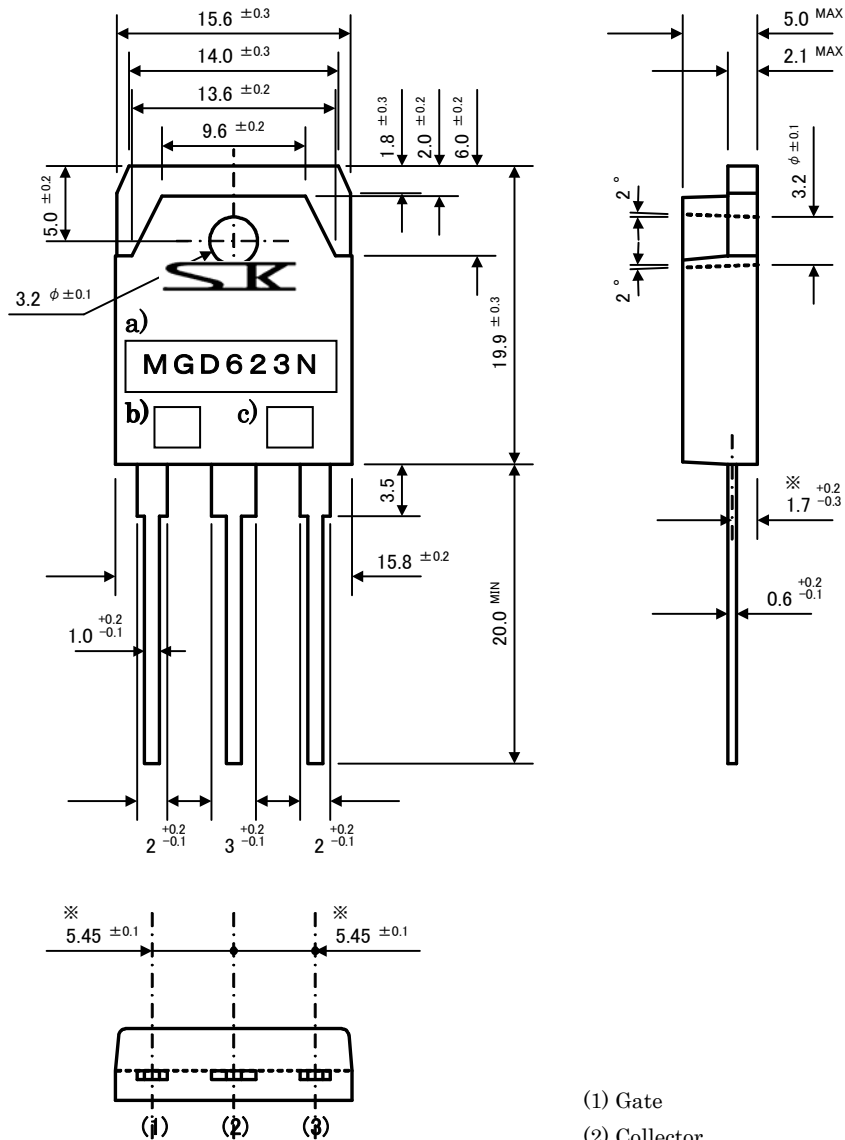
(a) Test Circuit



(b) Waveforms

Outline

TO-3P



Weight Approx. 6g

- (1) Gate
- (2) Collector
- (3) Emitter

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