

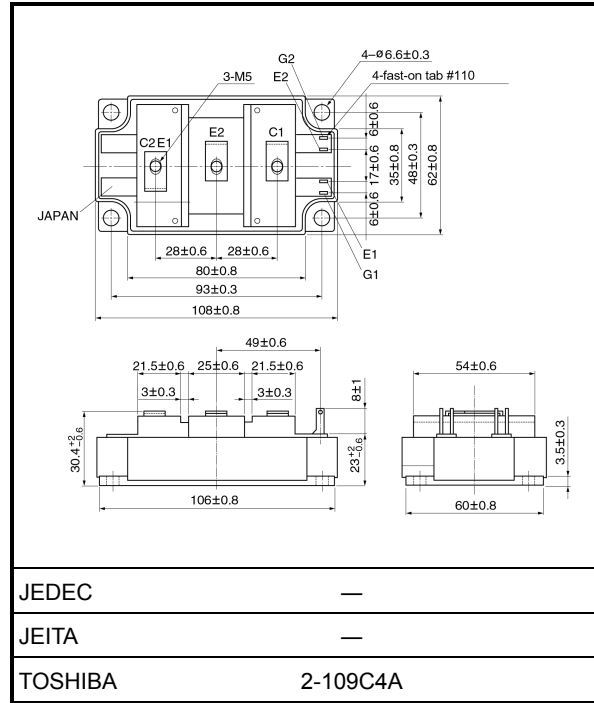
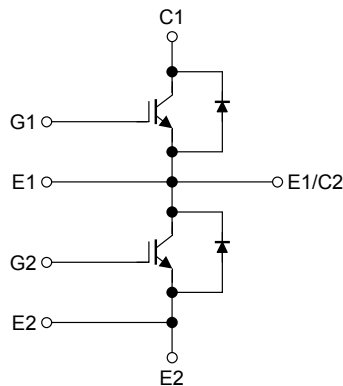
MG300Q2YS61

High Power Switching Applications
 Motor Control Applications

Unit: mm

- High input impedance
- High speed: $t_f = 0.3 \mu s$ (max)
 Inductive load
- Low saturation voltage: $V_{CE(sat)} = 2.6 V$ (max)
- Enhancement mode
- Includes a complete half bridge in one package.
- The electrodes are isolated from case.

Equivalent Circuit



Weight: 430 g (typ.)

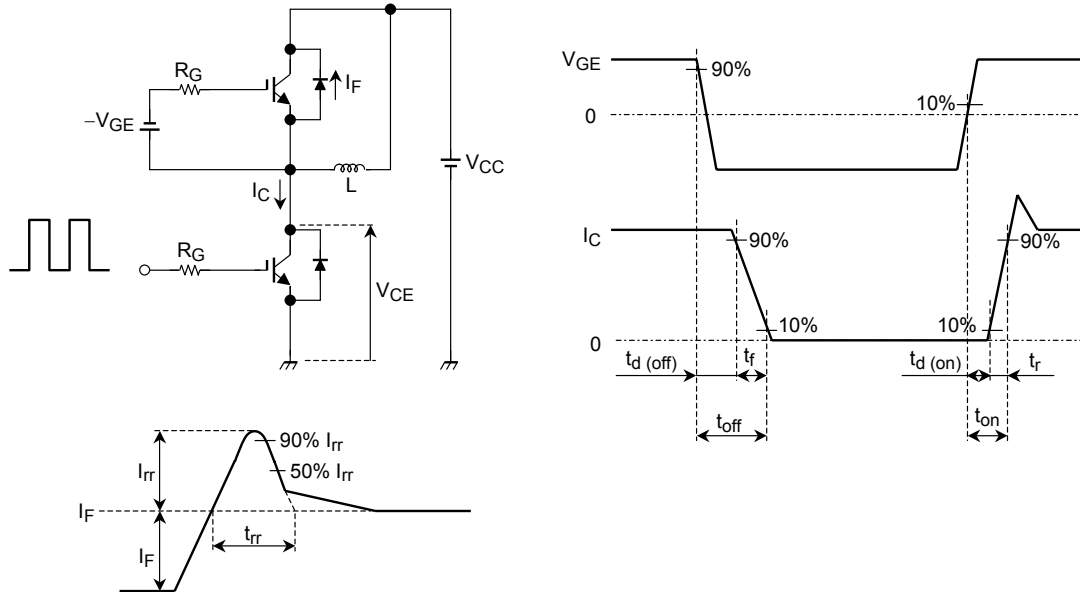
Maximum Ratings (Tc = 25°C)

Characteristics	Symbol	Rating	Unit	
Collector-emitter voltage	V_{CES}	1200	V	
Gate-emitter voltage	V_{GES}	±20	V	
Collector current	DC (Tc = 80°C)	I_C	300	A
Forward current	DC (Tc = 80°C)	I_F	300	A
Collector power dissipation (Tc = 25°C)	P_C	2700	W	
Junction temperature	T_j	150	°C	
Storage temperature range	T_{stg}	-40 to 125	°C	
Isolation voltage	V_{isol}	2500 (AC 1 minute)	Vrms	
Screw torque	Terminal	—	3	N·m
	Mounting	—	3	N·m

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Gate leakage current	I_{GES}	$V_{GE} = \pm 20 \text{ V}, V_{CE} = 0 \text{ V}$	—	—	± 500	nA	
Collector cut-off current	I_{CES}	$V_{CE} = 1200 \text{ V}, V_{GE} = 0 \text{ V}$	—	—	1	mA	
Gate-emitter cut-off voltage	$V_{GE (off)}$	$I_C = 300 \text{ mA}, V_{CE} = 5 \text{ V}$	6.0	7.0	8.0	V	
Collector-emitter saturation voltage	$V_{CE (sat)}$	$I_C = 300 \text{ A}, V_{GE} = 15 \text{ V}$	$T_c = 25^\circ\text{C}$	—	2.1	2.6	V
			$T_c = 125^\circ\text{C}$	—	2.7	3.2	
Input capacitance	C_{ies}	$V_{CE} = 10 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$	—	25000	—	pF	
Switching time	Turn-on delay time	Inductive load $V_{CC} = 600 \text{ V}$ $I_C = 300 \text{ A}$ $V_{GE} = \pm 15 \text{ V}$ $R_G = 2.7 \Omega$ (Note 1)	—	0.3	—	μs	
	Rise time		—	0.2	—		
	Turn-on time		—	0.5	—		
	Turn-off delay time		—	0.5	—		
	Fall time		—	0.1	0.3		
	Turn-off time		—	0.6	—		
Forward voltage	V_F	$I_F = 300 \text{ A}, V_{GE} = 0 \text{ V}$	$T_c = 25^\circ\text{C}$	—	2.4	2.8	V
			$T_c = 125^\circ\text{C}$	—	2.2	—	
Reverse recovery time	t_{rr}	$I_F = 300 \text{ A}, V_{GE} = -15 \text{ V}, di/dt = 1500 \text{ A}/\mu\text{s}$	—	0.2	—	μs	
Thermal resistance	$R_{th (j-c)}$	Transistor stage	—	—	0.045	$^\circ\text{C}/\text{W}$	
		Diode stage	—	—	0.100		

Note 1: Switching time and reverse recovery time test circuit and timing chart



< $V_{CE(sat)}$ Rank >

$V_{CE(sat)}$

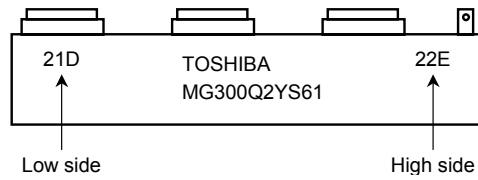
Rank Symbol	Min	Max
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22	1.90	2.20
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24	2.10	2.40
25	2.20	2.50
26	2.30	2.60
27	2.40	2.70

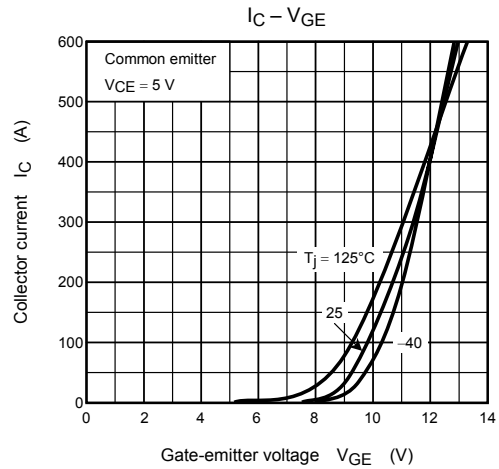
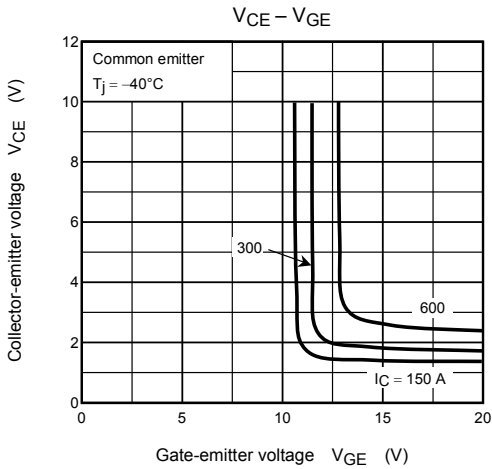
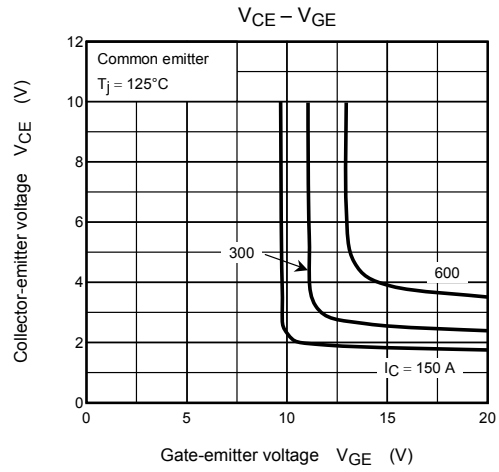
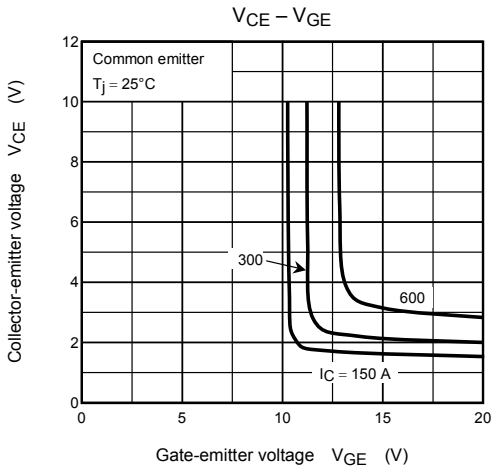
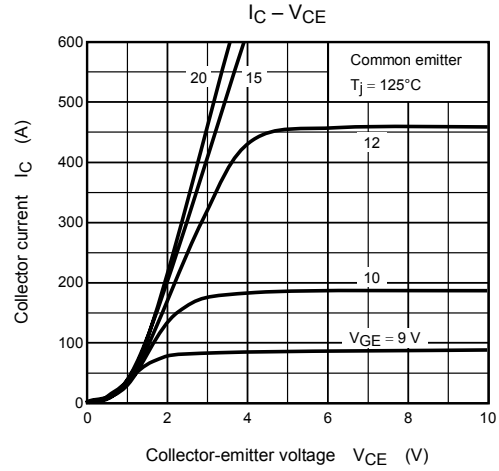
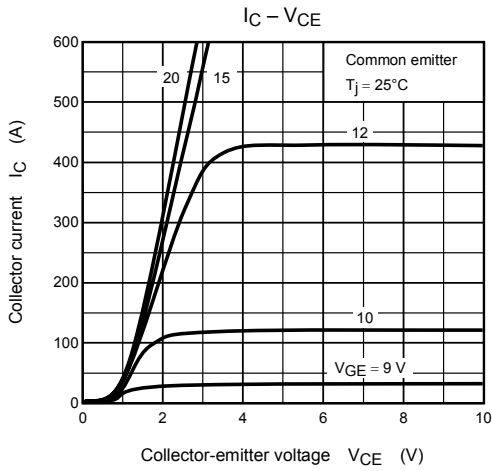
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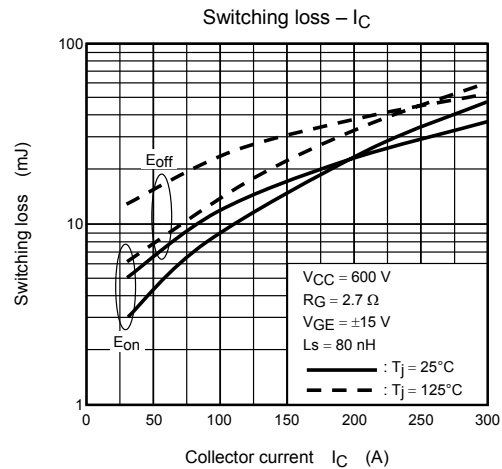
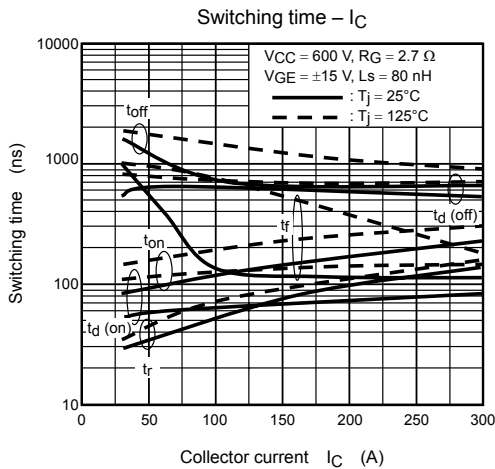
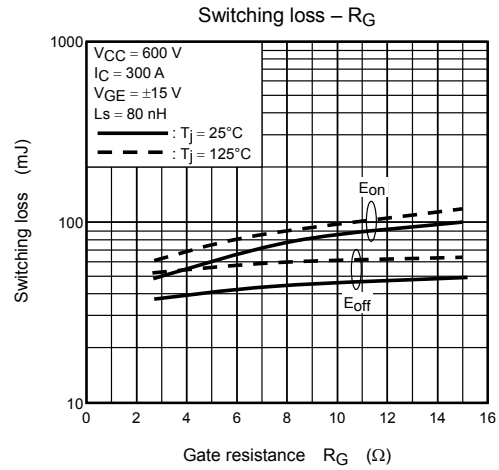
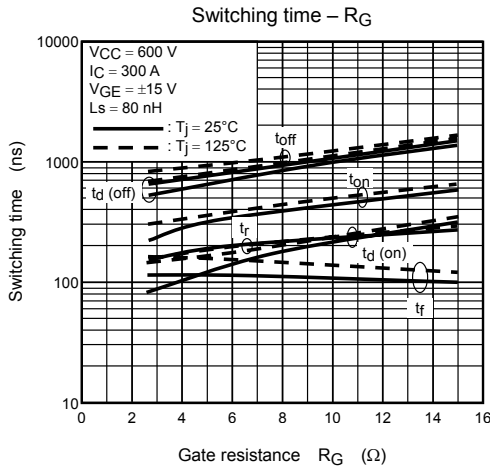
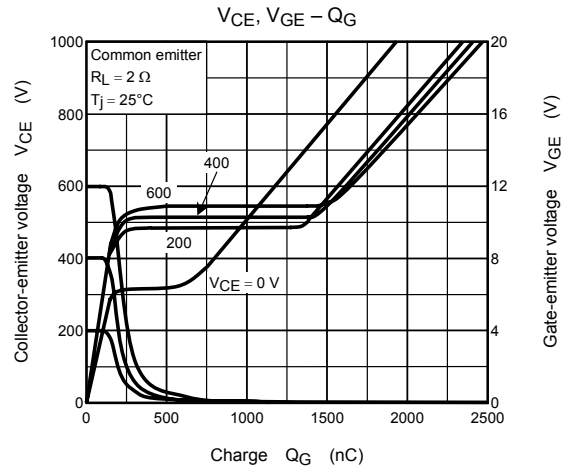
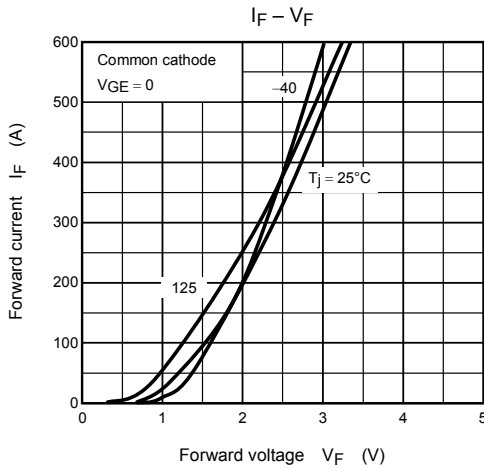
V_F

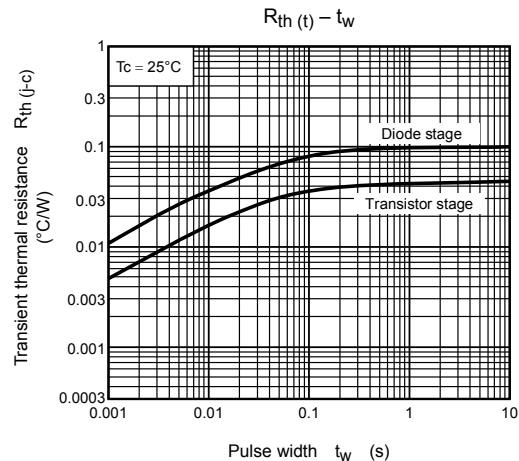
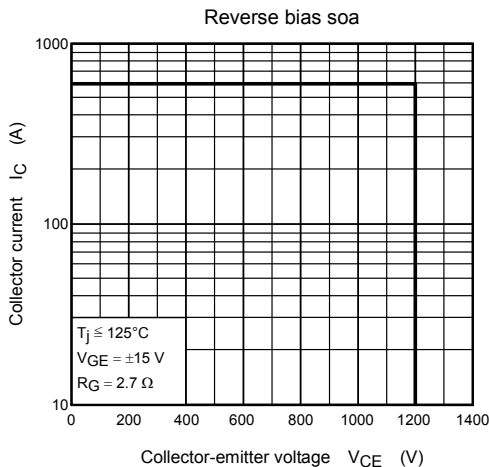
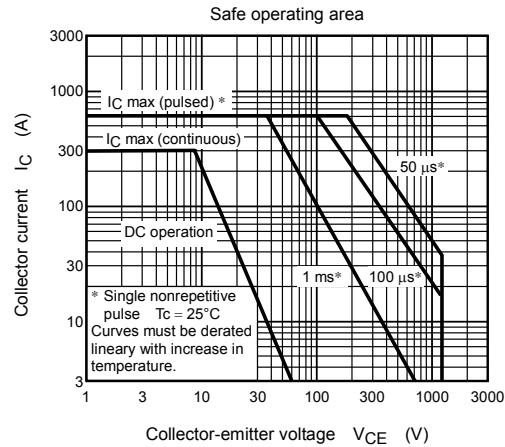
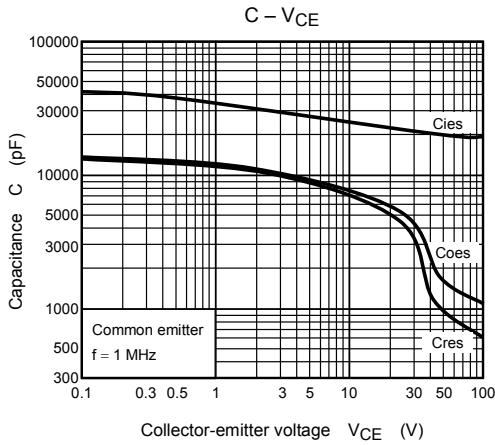
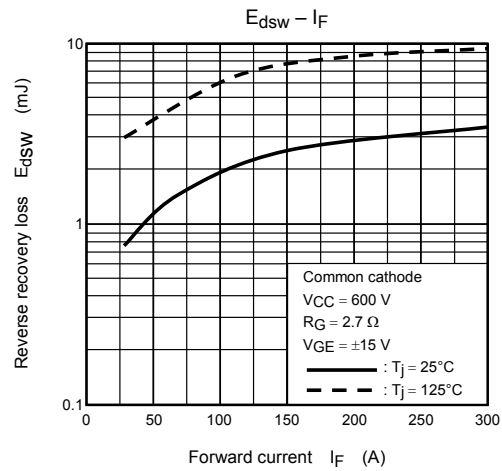
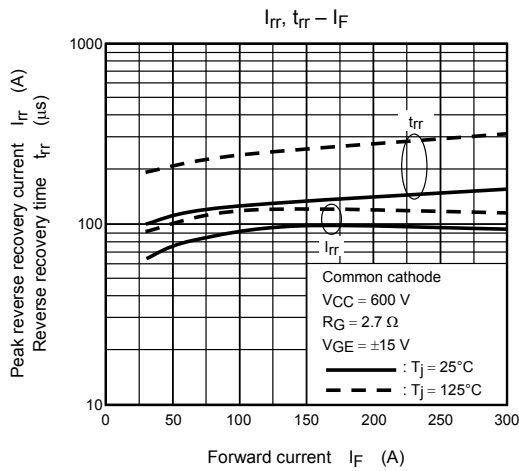
Rank Symbol	Min	Max
D	1.9	2.2
E	2.1	2.4
F	2.3	2.6
G	2.5	2.8

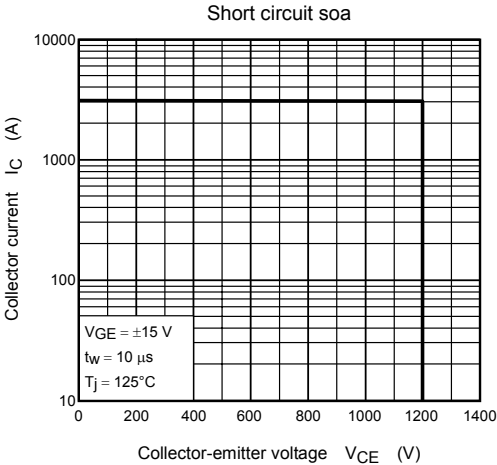
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