SML400HB01MF

Attributes:
-aerospace build standard
-high reliability
-lightweight
-metal matrix base plate
-AlN isolation
-Mosfet module

Maximum rated values/Electrical Properties

Source-drain voltage V_{DSS}	Tj=25C to 175C Rgs=1MΩ	V_{DSS}	100	V
DC Collector Current I_{D25}	Tc=25C Tc=25C,Tvj=175C	I_c, nom Ic	400 400	A
Repetitive peak Drain Current	tp=1msec,Tc=80C	I_{crm}	600	A
Total Power Dissipation	Tc=25C	P_{tot}	1700	W
Gate-emitter peak voltage	Continuous Transient	V_{GS}	+/-20 =/-30	V V
Repetitive Peak Forward Current	tp=1msec	I_{frm}	600	A
Isolation voltage	RMS, 50Hz, t=1min	V_{isol}	2500	V

			MIN	TYP	MAX	
Drain-source breakdown voltage	I_D=250µA,V_{GS}=0V, Tc=25C	BV_{DSS}	100			V
Gate Threshold voltage	I_D=8mA,V_{DS}=V_{GS}, Tvj=25C	$Vge_{(th)}$	3.0		5	V
C_{iss} C_{oss} C_{rss}	f=1MHz,Tvj=25C,Vgs=0V,V_{DS}=0V			15200 5800 1720		pF pF pF
$Q_{g(on)}$ Q_{gs} Q_{gd}	Tvj=25C,V_{DS}=0.5V_{DSS},ID=0.5I_{D25},V_{GS}=10V			470 100 270		nC nC nC
Gate-source leakage current	V_{GS}=+/-20V, V_{GS}=0V,Tvj=25C	I_{GSS}		1	+/-200	nA
Drain source leakage current	V_{DS}=V_{GS}=20V, Tvj=25C Tvj=150C Tvj=175C	I_{DSS}			25 1 5	µA mA mA

gfs	Vgs=10V, I_D=0.5I_{D25}		60	97		S
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	Ic=120A,V_{DS}=0.5VDSS,V_{GS}=10 V Rge=3.3Ω,L=30nH Tvj=25C			50 60 150 90		ns ns Ns ns
Stray Module inductance		$L_{\sigma ce}$		30		nH
Terminal-chip resistance		R_c		1.0		mΩ

Source –Drain Diode characteristics

			TYP	MAX	
DC Forward Diode Current Is	T_c=25C V_{GS}=0V	I_s		400	A
Repetitive forward current		Ism		800	A
	I_F=I_S, V_{GS}=0V t_P=300µsec, duty cycle=2%	V_{SD}		1.5	V
Peak reverse recovery current	If=50A, -di/dt=100A/µsec V_R=50V,Vgs=0V,Tvj=25C	I_{rm}	12		A
Reverse recovery time	If=50A, -di/dt=100A/µsec Vr=50V,Vgs=0V,Tvj=25C	trr		300	ns
Recovered charge	If=50A, -di/dt=100A/µsec Vr=50V,Vgs=0V,Tvj=25C	Qrm	0.8		µC

Thermal Properties			Min	Typ	Max	
Thermal resistance junction to case	Igbt Diode	$R_{\theta J-C}$			0.09 0.11	K/W
Thermal resistance case to heatsink		$R_{\theta C-hs}$		0.03		K/W
Maximum junction temperature		Tvj			175	C
Maximum operating temperature		Top	-55		175	C
Storage Temperature		Tstg	-55		175	C

Fig. 1. Output Characteristics @ 25°C

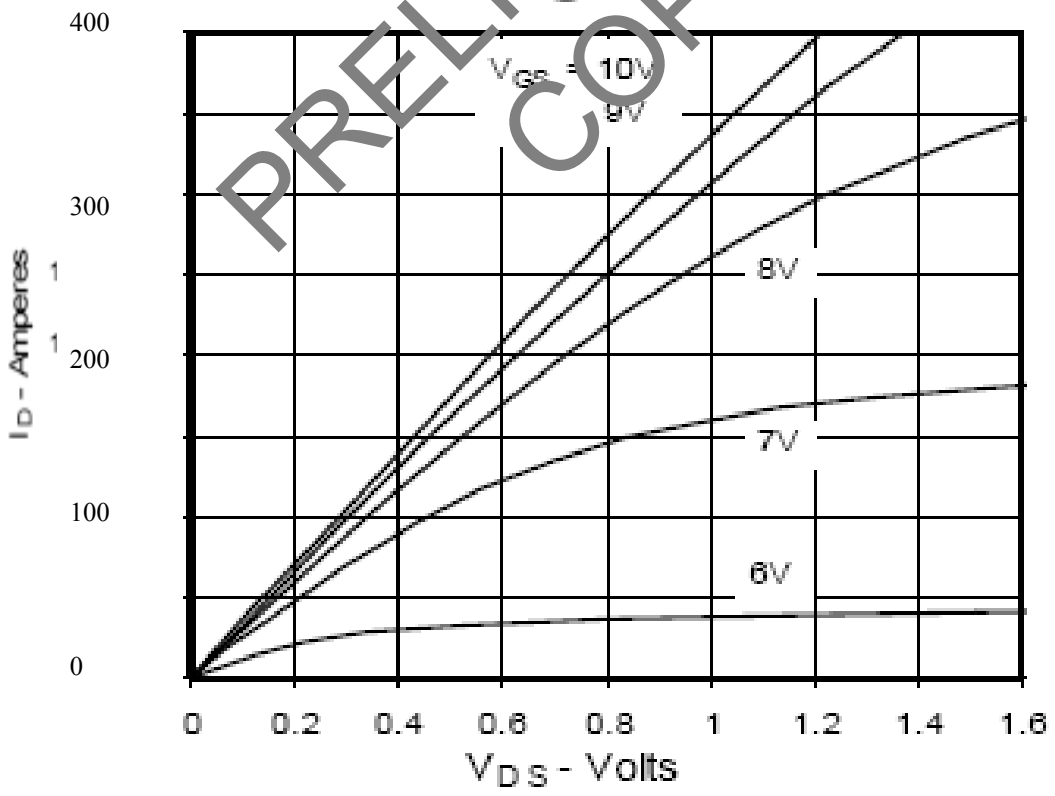


Fig. 2. Extended Output Characteristics
@ 25°C

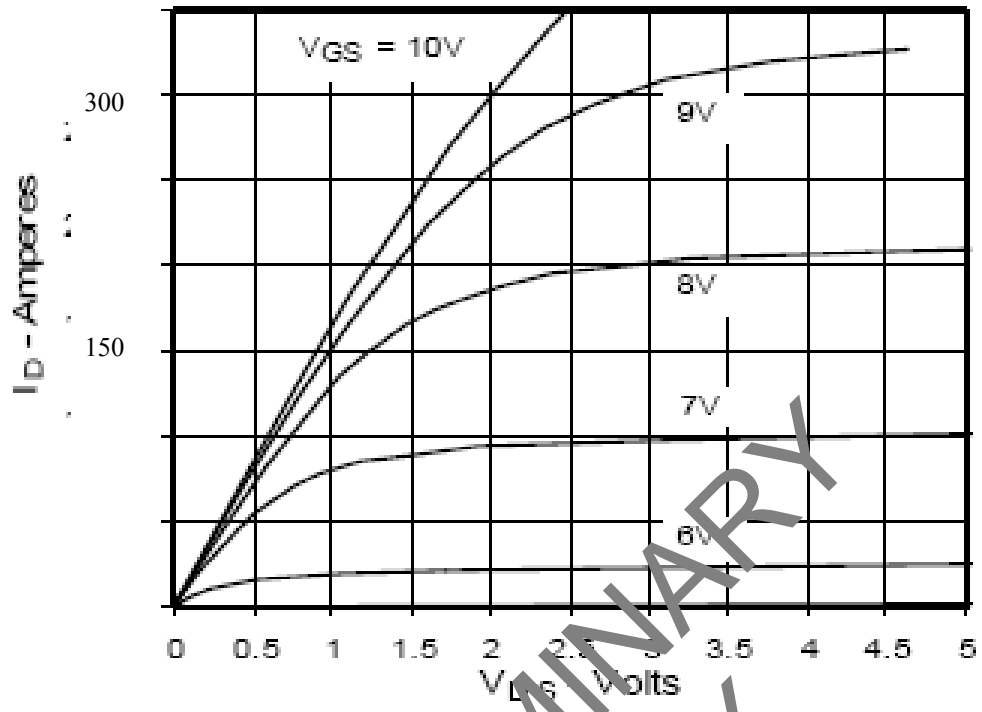


Fig. 3. Output Characteristics
@ 150°C

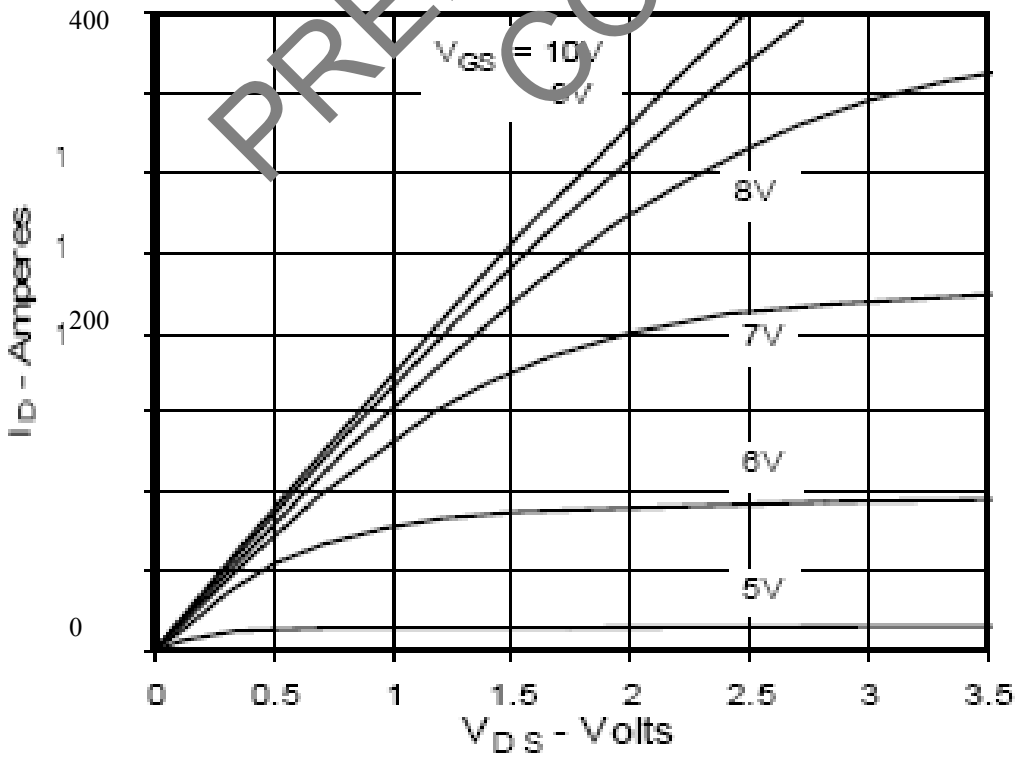


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

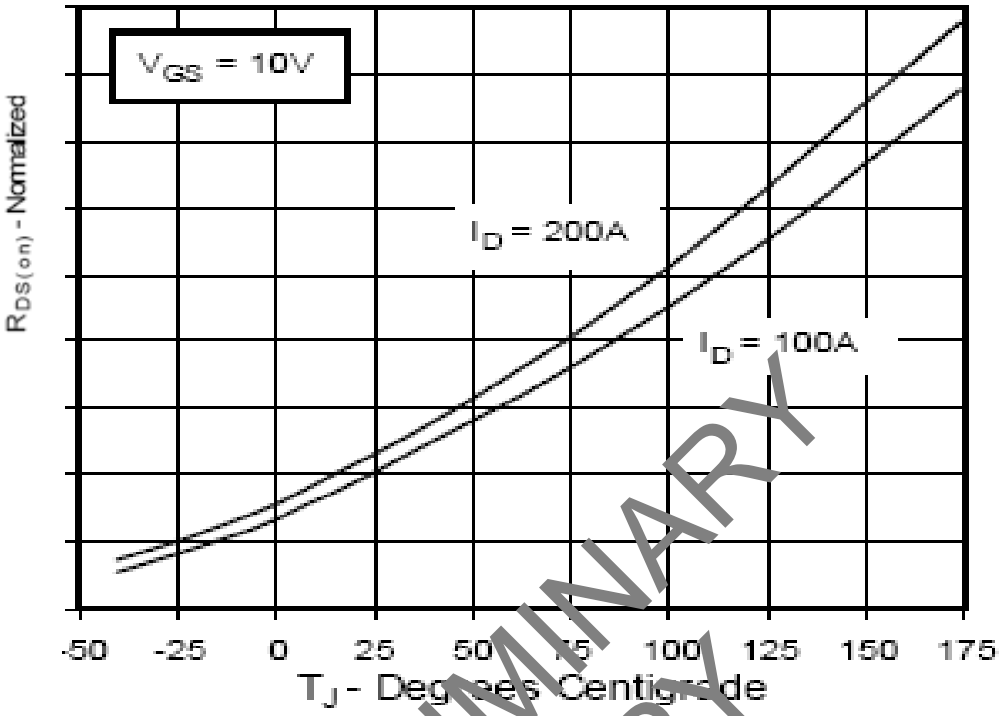


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Drain Current

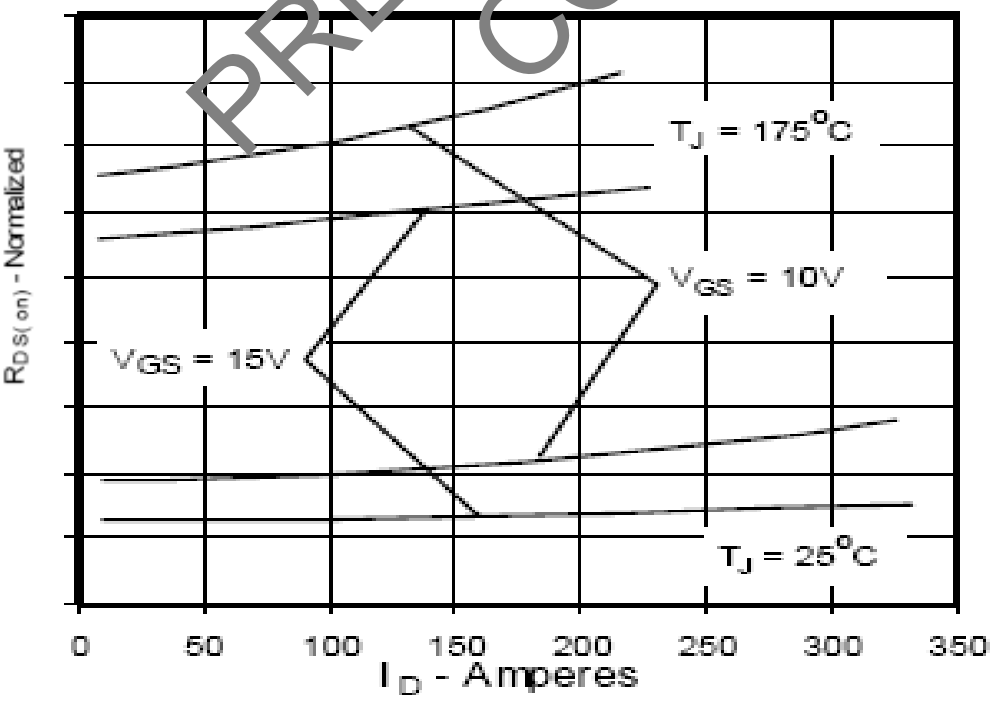


Fig. 6. Drain Current vs. Case Temperature

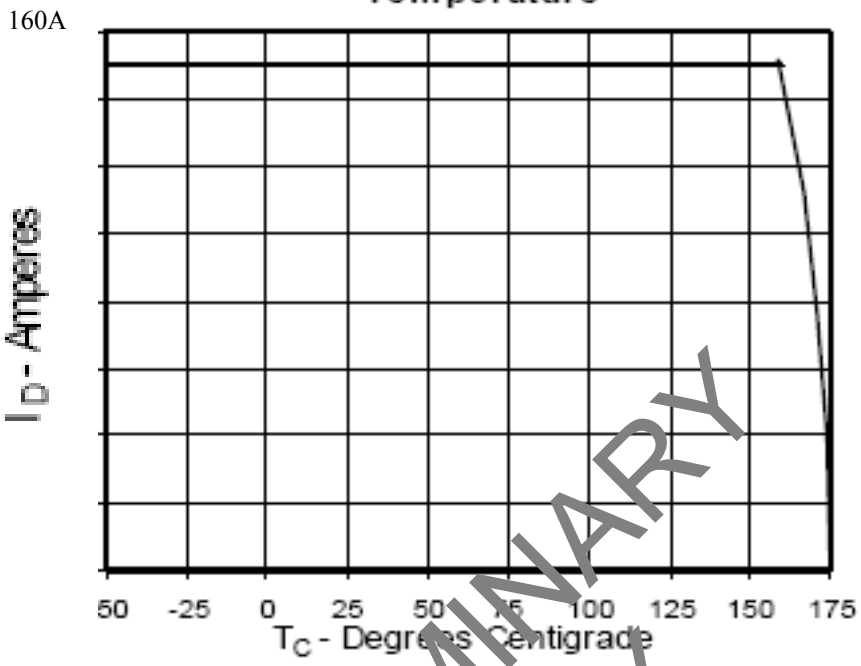


Fig. 7 Input Admittance

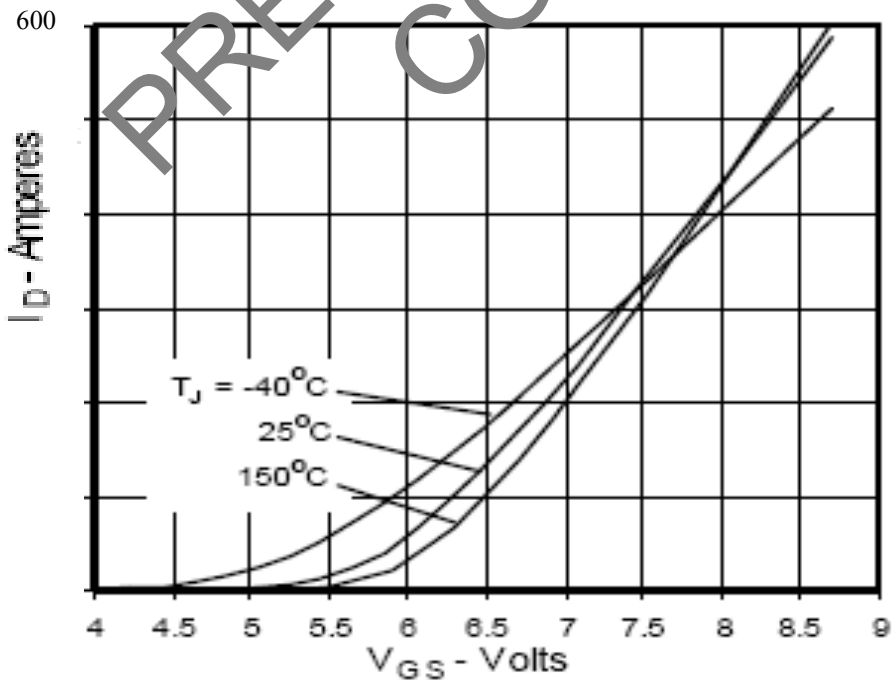


Fig. 8. Transconductance

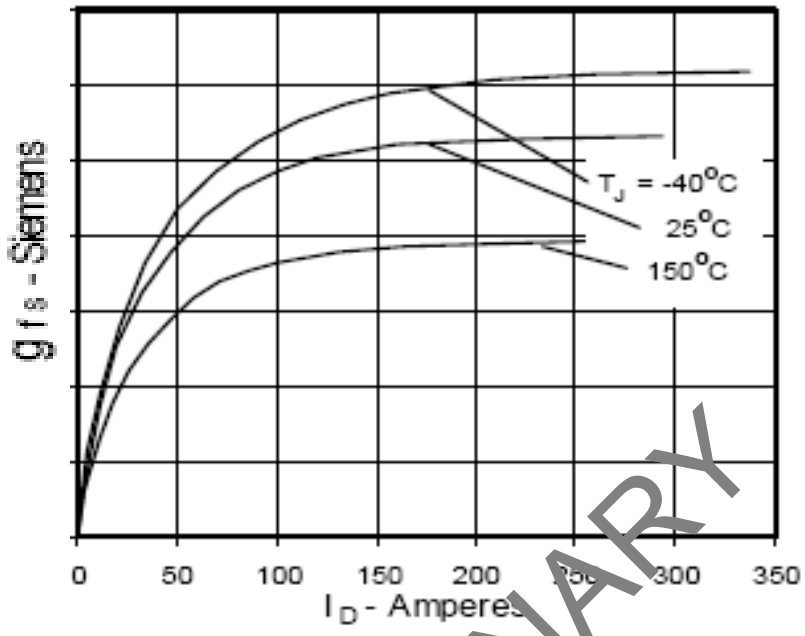


Fig. 9. Source Current vs Source-To-Drain Voltage

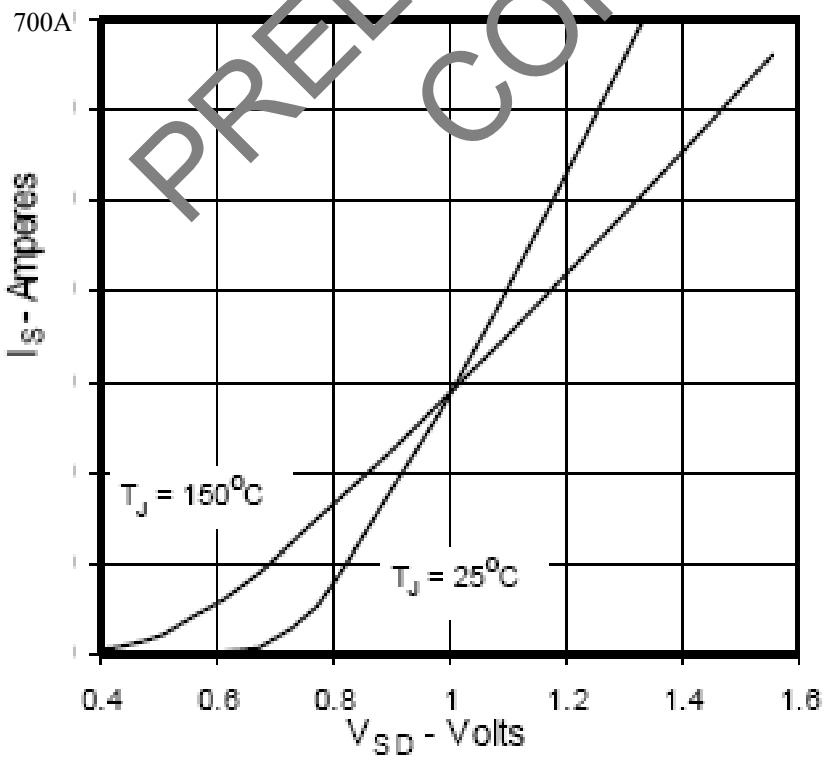


Fig. 10. Gate Charge

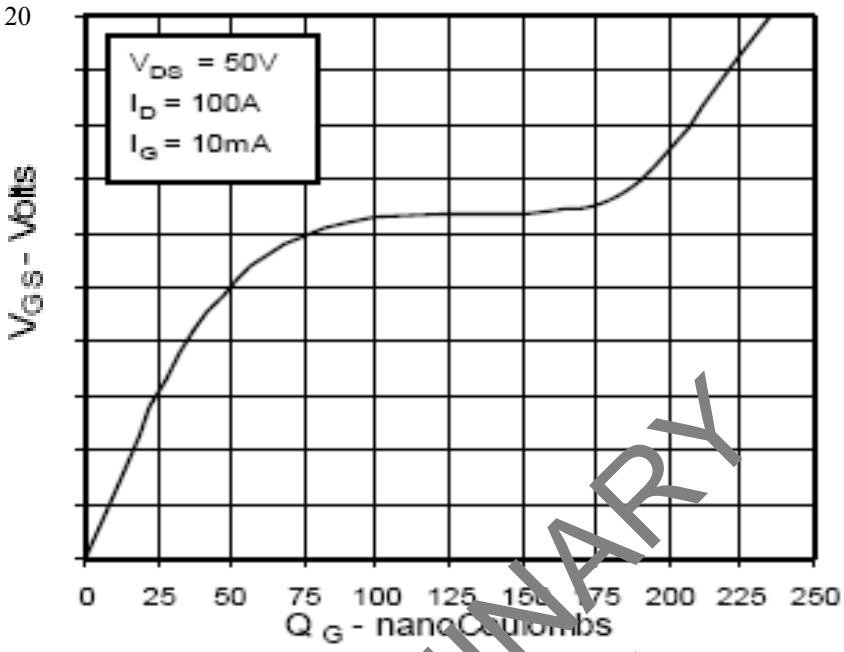
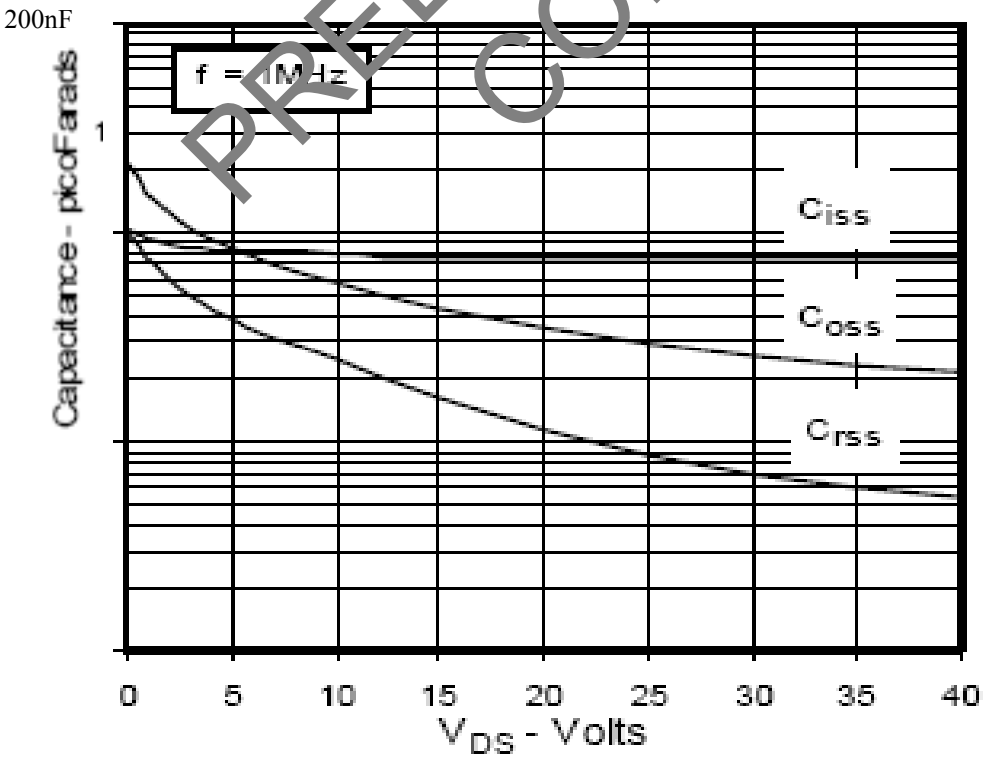
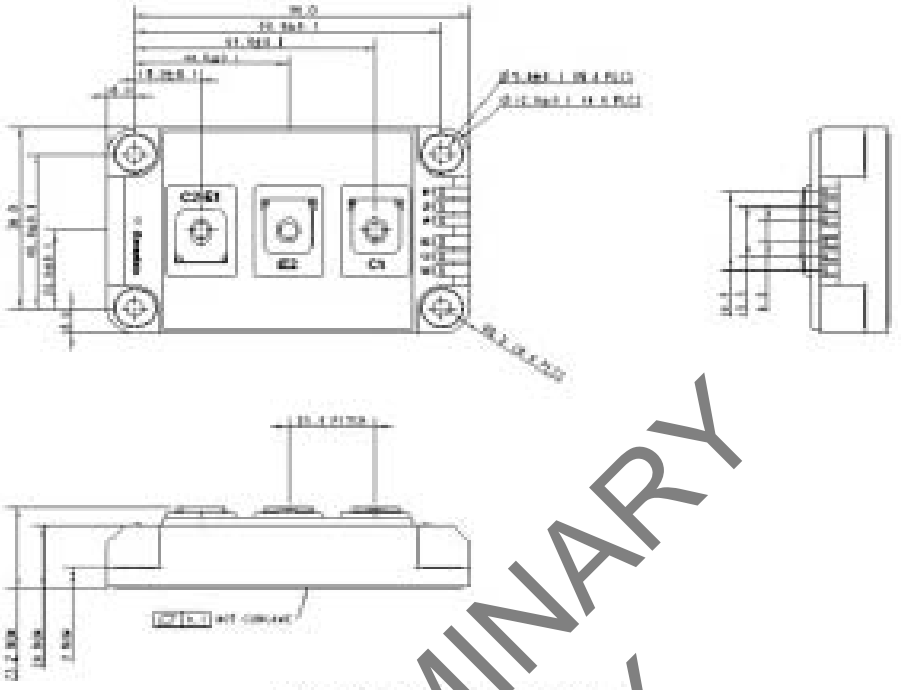
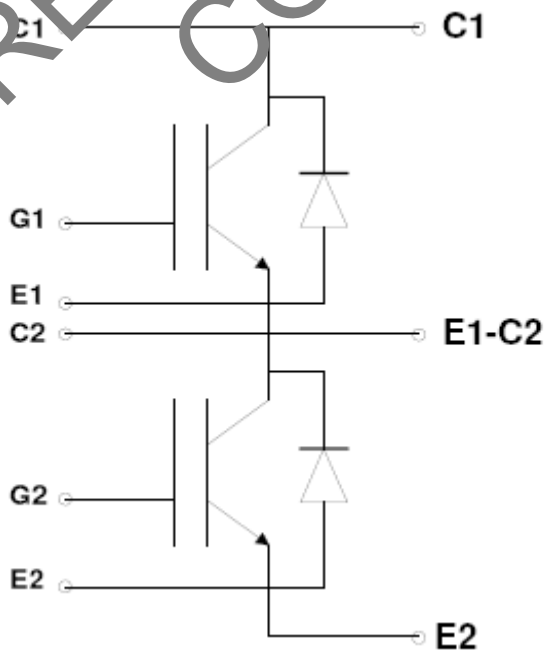


Fig. 11. Capacitance





All dimensions in mm



CIRCUIT DIAGRAM