



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}	$T_j=25C$ to $175C$ $R_{gs}=1M\Omega$	V_{DSS}	100	V
DC Collector Current I_{D25}	$T_c=25C$ $T_c=25C, T_vj=175C$	$I_{c, nom}$ I_c	400 400	A
Repetitive peak Drain Current	$t_p=1msec, T_c=80C$	I_{crm}	600	A
Total Power Dissipation	$T_c=25C$	P_{tot}	1700	W
Gate-emitter peak voltage	Continuous Transient	V_{GS}	+/-20 =/-30	V V
Repetitive Peak Forward Current	$t_p=1msec$	I_{frm}	600	A
Isolation voltage	RMS, 50Hz, $t=1min$	V_{isol}	2500	V

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



gfs	$V_{gs}=10V, I_D=0.5I_{D25}$		60	97		S
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$I_c=120A, V_{DS}=0.5V_{DSS}, V_{GS}=10V$ $R_{ge}=3.3\Omega, L=30nH$ $T_{vj}=25C$			50 60 150 90		ns ns Ns ns
Stray Module inductance		$L_{\sigma ce}$		30		nH
Terminal-chip resistance		R_c		1.0		m Ω

Source –Drain Diode characteristics

TYP MAX

DC Forward Diode Current I_s	$T_c=25C, V_{GS}=0V$	I_s		400	A
Repetitive forward current		I_{sm}		800	A
	$I_F=I_s, V_{GS}=0V$ $t_p=300\mu sec, \text{ duty cycle}=2\%$	V_{SD}		1.5	V
Peak reverse recovery current	$I_f=50A, -di/dt=100A/\mu sec$ $V_R=50V, V_{gs}=0V, T_{vj}=25C$	I_{rm}	12		A
Reverse recovery time	$I_f=50A, -di/dt=100A/\mu sec$ $V_R=50V, V_{gs}=0V, T_{vj}=25C$	t_{rr}		300	ns
Recovered charge	$I_f=50A, -di/dt=100A/\mu sec$ $V_R=50V, V_{gs}=0V, T_{vj}=25C$	Q_{rm}	0.8		μC



Thermal Properties

Min Typ Max

Property	Symbol	Min	Typ	Max	Unit
Thermal resistance junction to case	$R_{\theta J-C}$			0.09 0.11	K/W
Thermal resistance case to heatsink	$R_{\theta C-hs}$		0.03		K/W
Maximum junction temperature	T_{vj}			175	C
Maximum operating temperature	T_{op}	-55		175	C
Storage Temperature	T_{stg}	-55		175	C

Fig. 1. Output Characteristics
@ 25°C

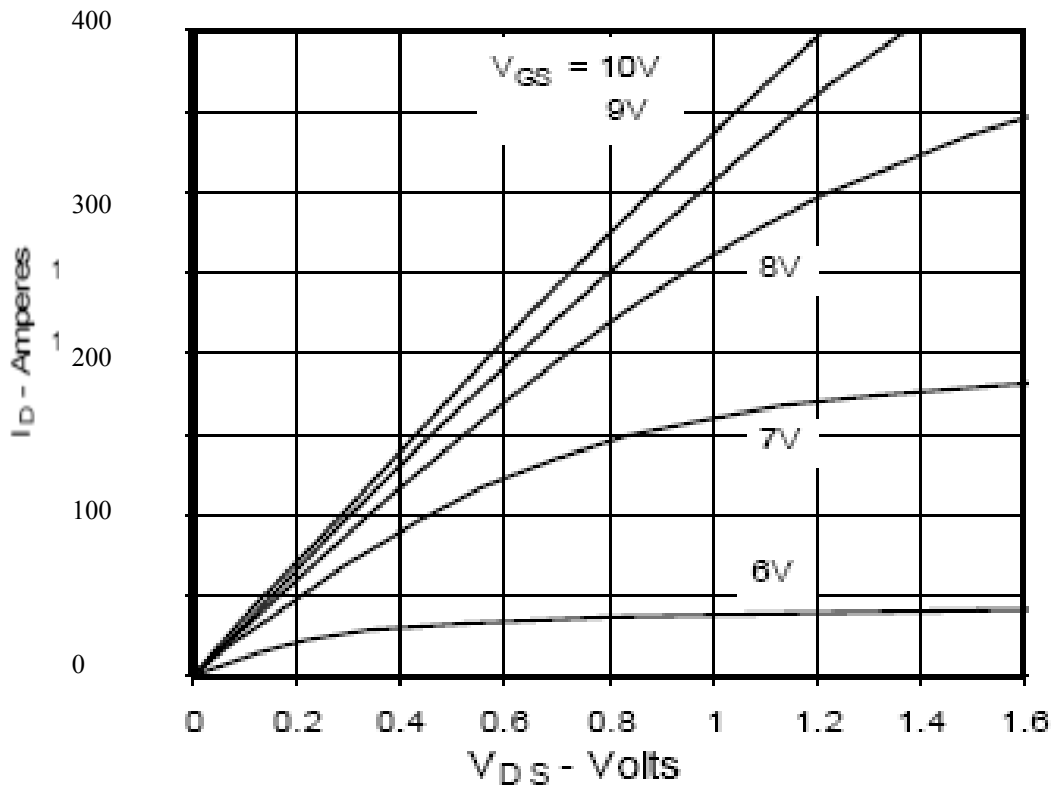




Fig. 2. Extended Output Characteristics
@ 25°C

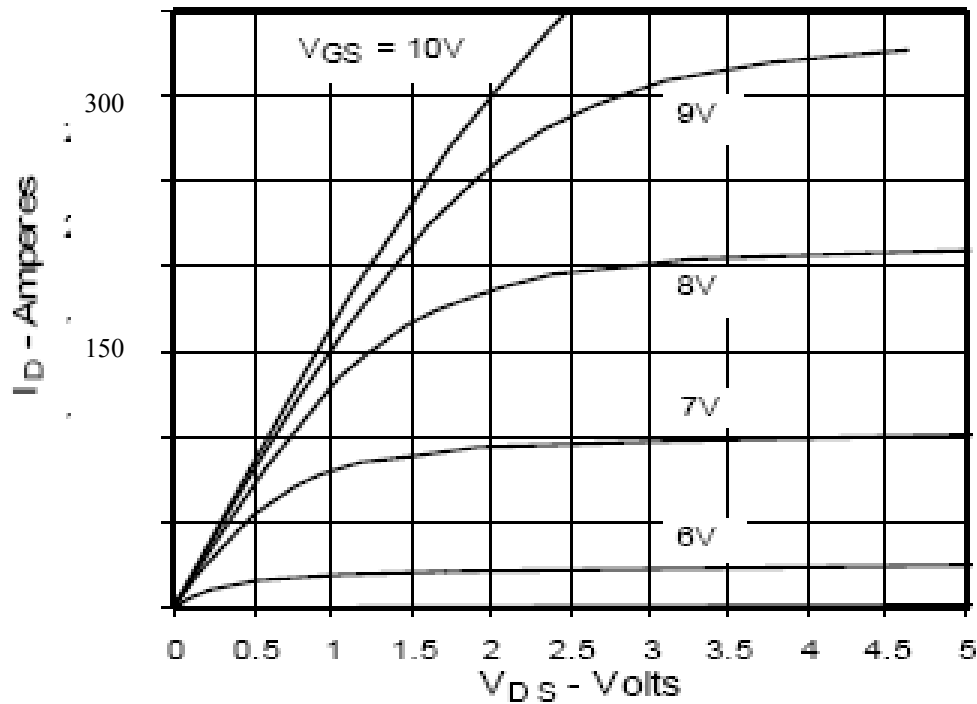


Fig. 3. Output Characteristics
@ 150°C

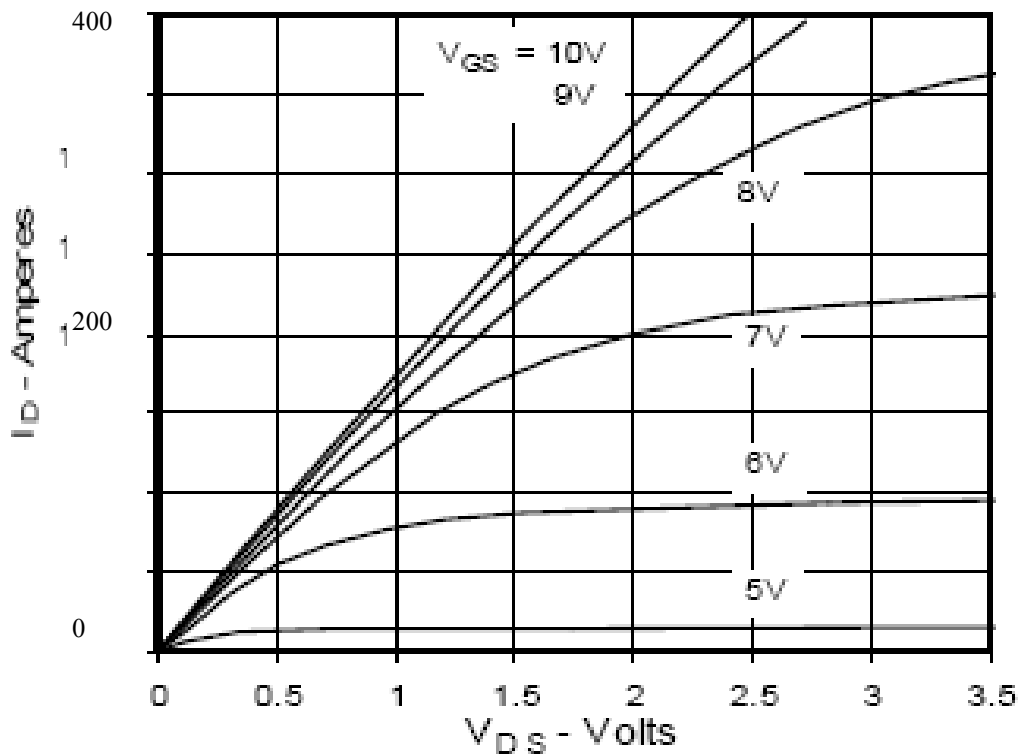




Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

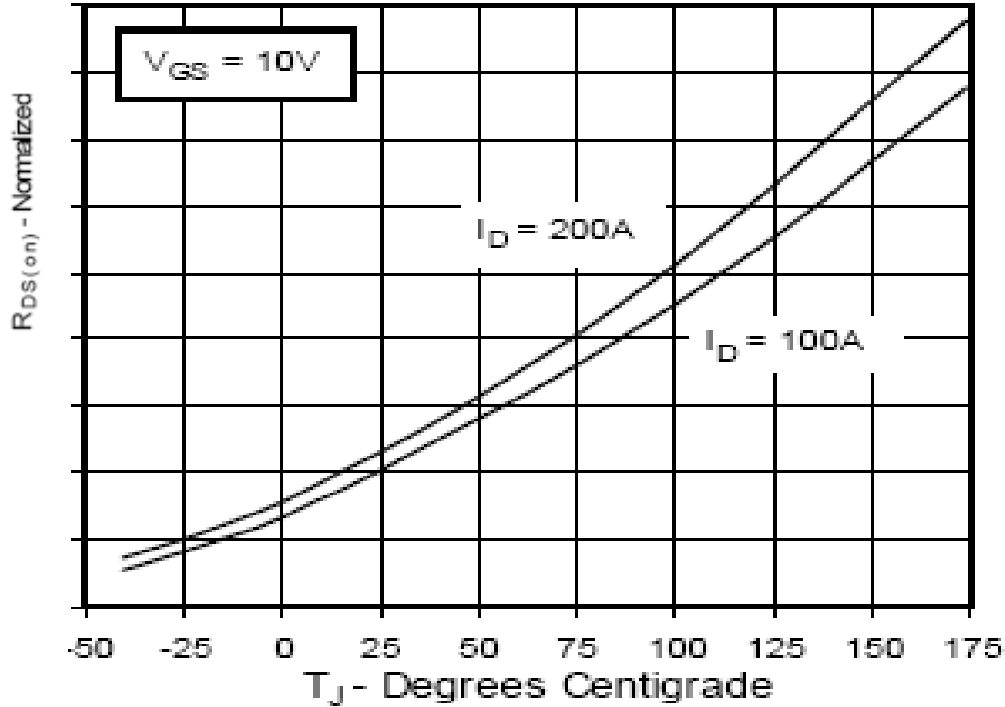


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Drain Current

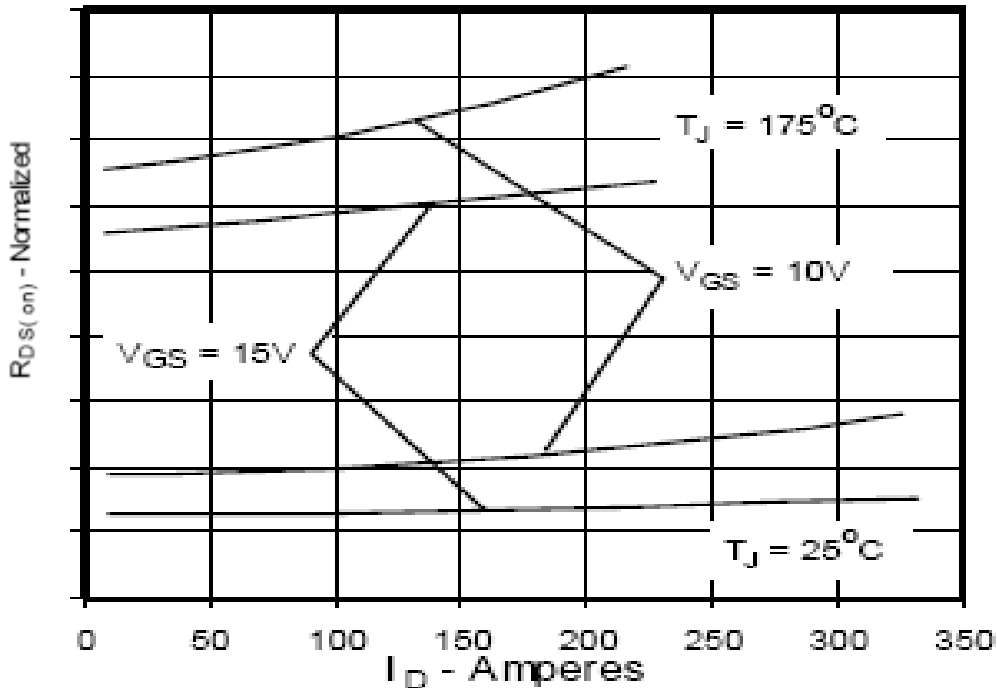




Fig. 6. Drain Current vs. Case Temperature

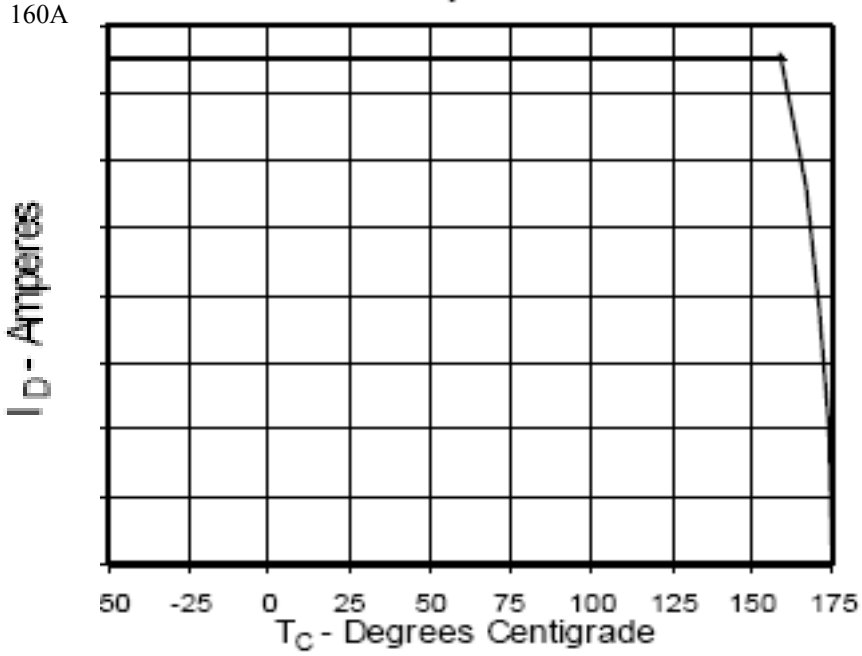


Fig. 7. Input Admittance

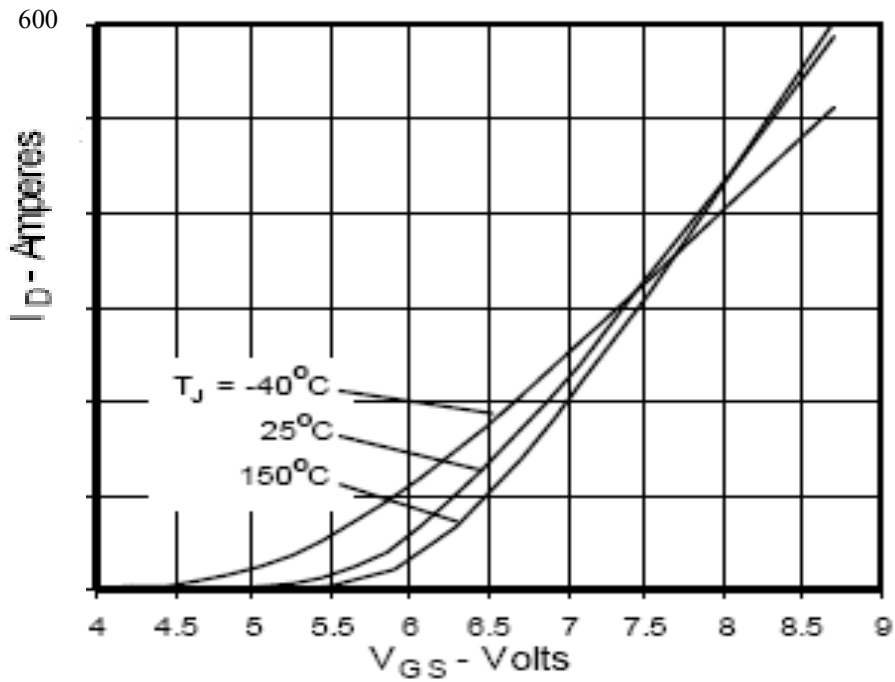




Fig. 8. Trans conductance

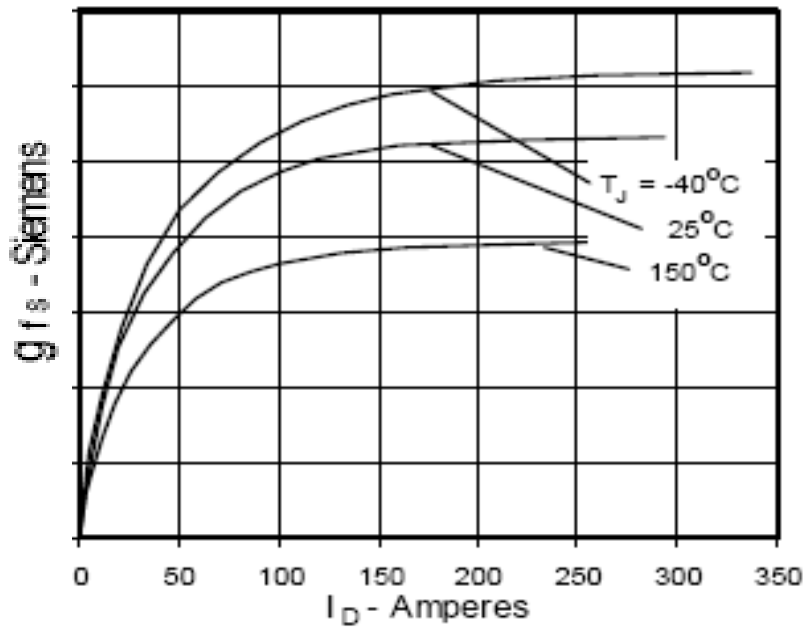


Fig. 9. Source Current vs. Source-To-Drain Voltage

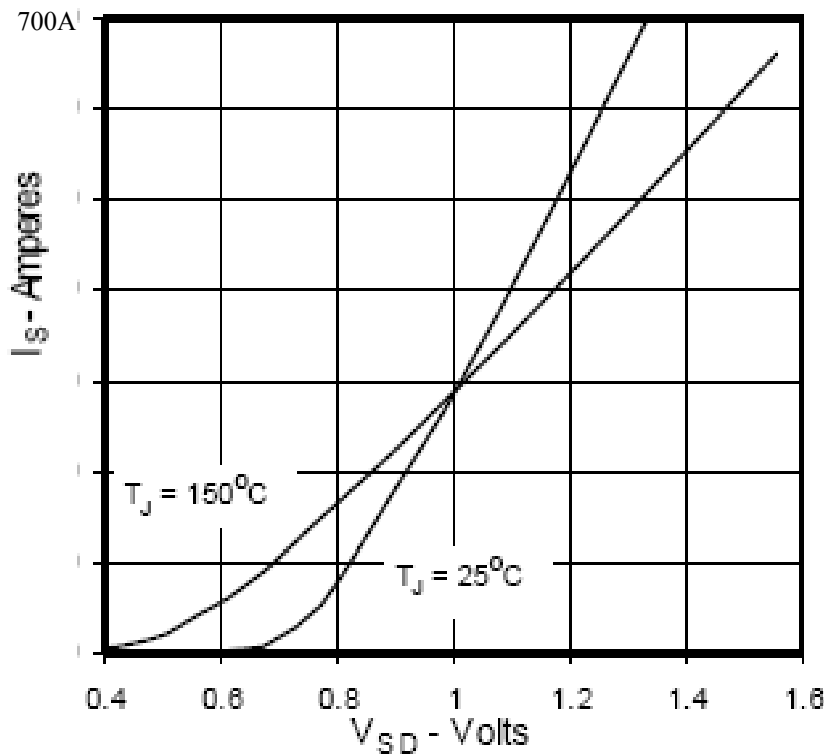




Fig. 10. Gate Charge

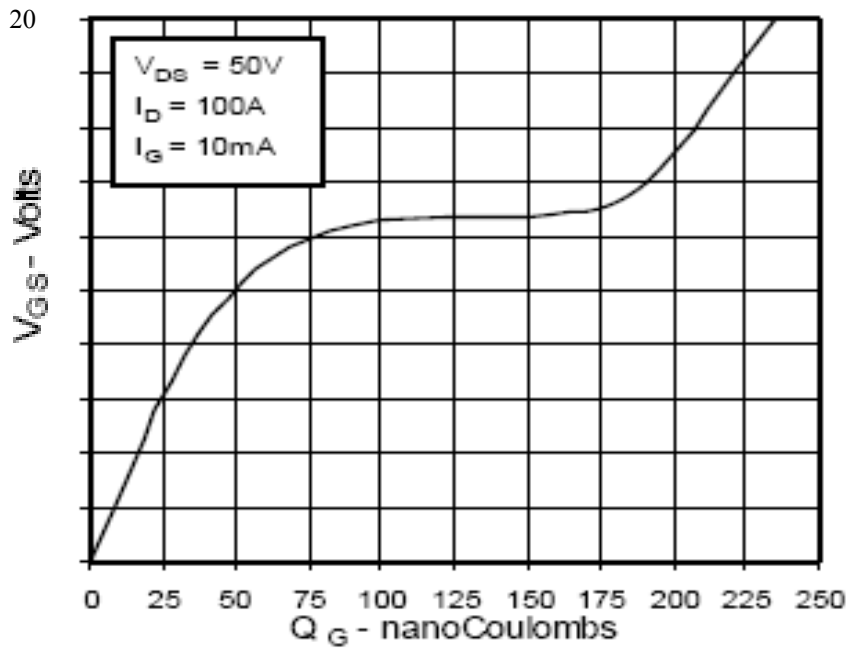


Fig. 11. Capacitance

