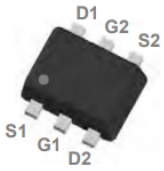
Features

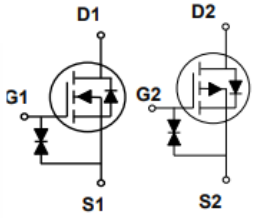
- *Low $R_{DS(on)}$ @V_{GS}=4.5V*
- *2.5V Logic Level Control*
- *SOT563 Package*
- *Pb−Free, RoHS Compliant*

V_{DS}	20	-20	V
$R_{DS(on),TYP}$@ V_{GS}=±4.5 V	200	510	mΩ
$R_{DS(on),TYP}$@ V_{GS}=±3.3V	220	570	mΩ
$I_{D\ Max}$	1	-0.6	A

Applications

- *LED Lighting Application*
- *ON/OFF switch*
- *Networking*





SOT563

Order Information

Product	Package	Marking	Packing
DMC2400UV-13-CN	SOT563	21	3000PCS/Reel

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter		Rating		Unit
			NMOS	PMOS	
V_{GS}	Gate-Source Voltage		±8	±8	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		20	-20	V
T_{STG} T_J	Storage and operating temperature range		-55 to 150		°C
I_S	Diode Continuous Forward Current	T_A=25°C	1	-0.6	A
Mounted on Large Heat Sink					
I_{DM}	Pulse Drain Current Tested①	T_A=25°C	4	-2.4	A
I_D	Continuous Drain Current	T_A=25°C	1	-0.6	A
		T_A=70°C	0.8	-0.48	
P_D	Power dissipation for Dual Operation	T_A=25°C	0.3		W
		T_A=70°C	0.2		
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		400		°C/W

N-Channel Electrical Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(T_A=25℃)	V_{DS}=20V, V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_A=125℃)	V_{DS}=16V, V_{GS}=0V	--	--	100	nA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±8V, V_{DS}=0V	--	--	±10	uA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.35	0.6	1.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=4.5V, I_D=0.5A	--	200	300	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=3.3V, I_D=0.3A	--	220	350	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=2.5V, I_D=0.2A	--	250	400	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	--	36	--	pF
C_{oss}	Output Capacitance		--	9.3	--	pF
C_{rss}	Reverse Transfer Capacitance		--	6.8	--	pF
Q_g	Total Gate Charge	V_{DS}=10V I_D=0.5A, V_{GS}=4.5V	--	0.8	--	nC
Q_{gs}	Gate Source Charge		--	0.11	--	nC
Q_{gd}	Gate Drain Charge		--	0.18	--	nC
Switching Characteristics@ T_J = 25°C (unless otherwise stated)						
$t_{d(on)}$	Turn on Delay Time	V_{DD}=10V, I_D=0.5A, R_G=3.3Ω, V_{GS}=4.5V	--	7	--	ns
t_r	Turn on Rise Time		--	10	--	ns
$t_{d(off)}$	Turn Off Delay Time		-	35	--	ns
t_f	Turn Off Fall Time		--	14	--	ns
Source Drain Diode Characteristics@ T_J = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage②	I_{SD}=0.3A, V_{GS}=0V	--	0.74	1.2	V

P-Channel Electrical Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=-250μA	-20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(T_A=25℃)	V_{DS}=-20V, V_{GS}=0V	--	--	-1	μA
	Zero Gate Voltage Drain Current(T_A=125℃)	V_{DS}=-16V, V_{GS}=0V	--	--	-100	nA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±8V, V_{DS}=0V	--	--	±10	uA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-0.35	-0.6	-1.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=-4.5V, I_D=-0.5A	--	510	650	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=-4.5V, I_D=-0.3A	--	570	700	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=-4.5V, I_D=-0.1A	--	600	800	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=-10V, V_{GS}=0V, f=1MHz	--	39	--	pF
C_{oss}	Output Capacitance		--	6.4	--	pF
C_{rss}	Reverse Transfer Capacitance		--	4.2	--	pF
Q_g	Total Gate Charge	V_{DS}=-10V I_D=-0.5A, V_{GS}=-4.5V	--	1.1	--	nC
Q_{gs}	Gate Source Charge		--	0.1	--	nC
Q_{gd}	Gate Drain Charge		--	0.3	--	nC
Switching Characteristics@ T_J = 25°C (unless otherwise stated)						
$t_{d(on)}$	Turn on Delay Time	V_{DD}=-10V, I_D=-0.5A, R_G=3.3Ω, V_{GS}=-4.5V	--	16	--	ns
t_r	Turn on Rise Time		--	32	--	ns
$t_{d(off)}$	Turn Off Delay Time		-	85	--	ns
t_f	Turn Off Fall Time		--	68	--	ns
Source Drain Diode Characteristics@ T_J = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage②	I_{SD}=-0.3A, V_{GS}=0V	--	-0.89	-1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

②Pulse test ; Pulse width≤300μs, duty cycle≤2%.

Typical Characteristics: N Channel

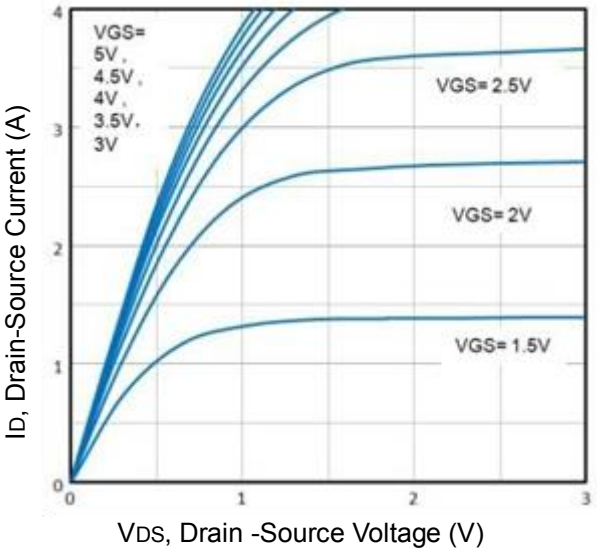


Fig1. Typical Output Characteristics

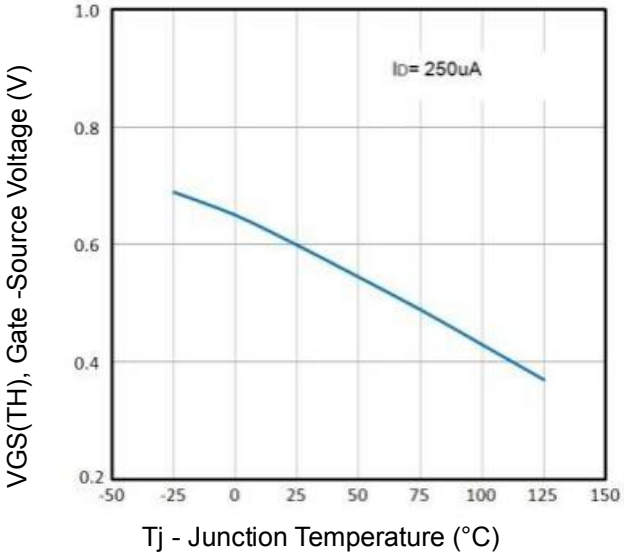


Fig2. Normalized Threshold Voltage Vs. Temperature

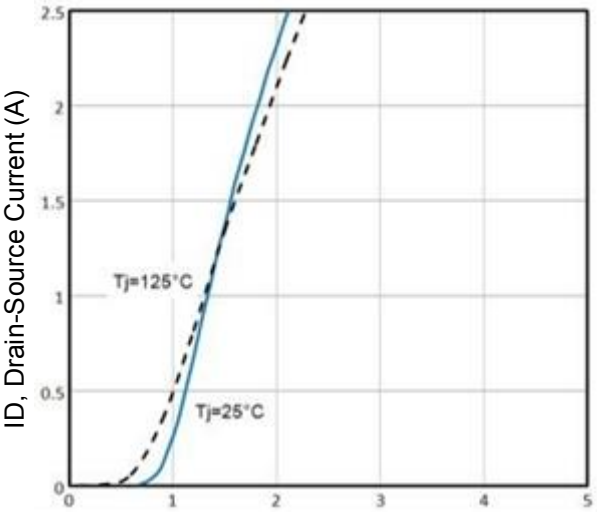


Fig3. Typical Transfer Characteristics

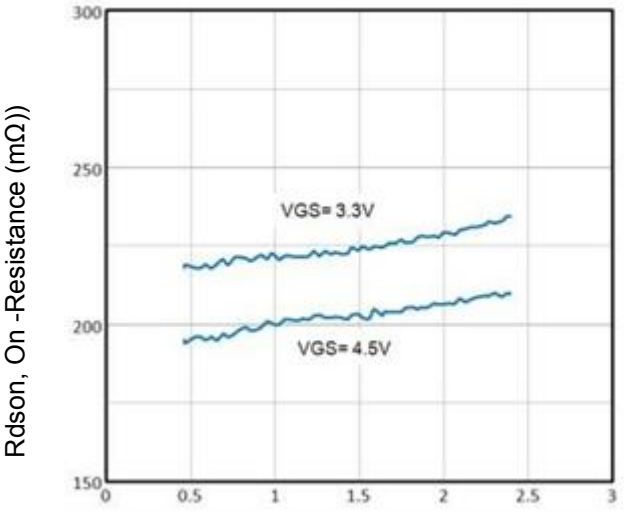


Fig4. On-Resistance vs. Drain Current and Gate

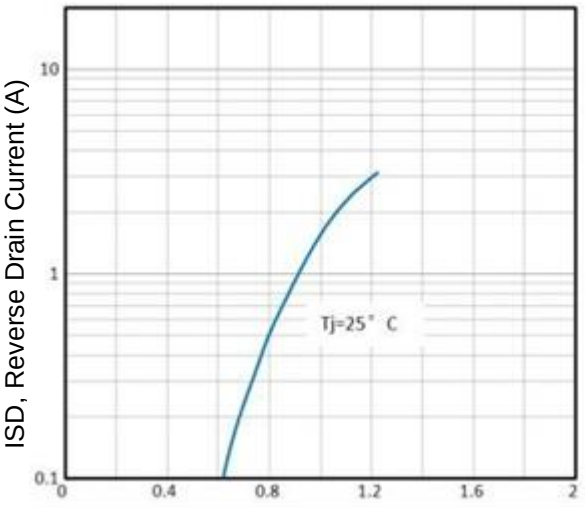


Fig5. Typical Source-Drain Diode Forward Voltage

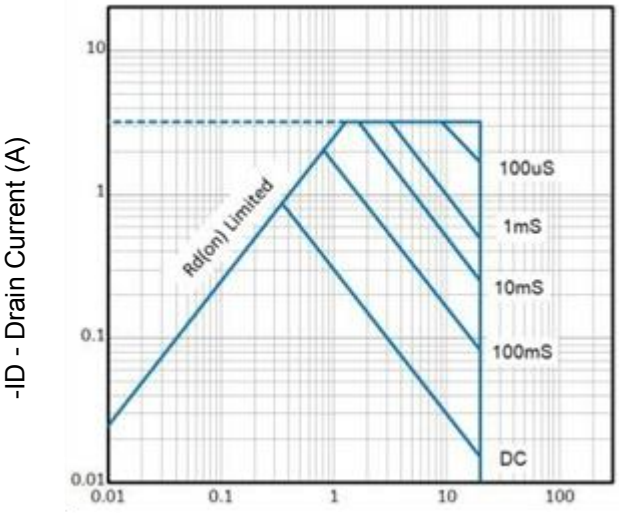


Fig6. Maximum Safe Operating Area

Typical Characteristics: N-Channel

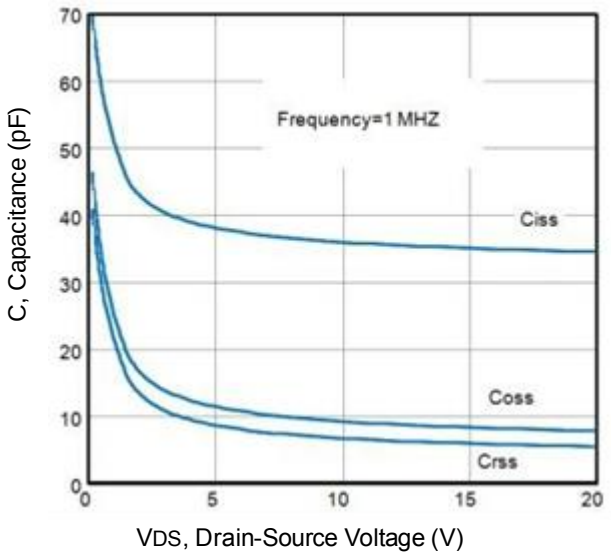


Fig7. Typical Capacitance Vs. Drain-Source Voltage

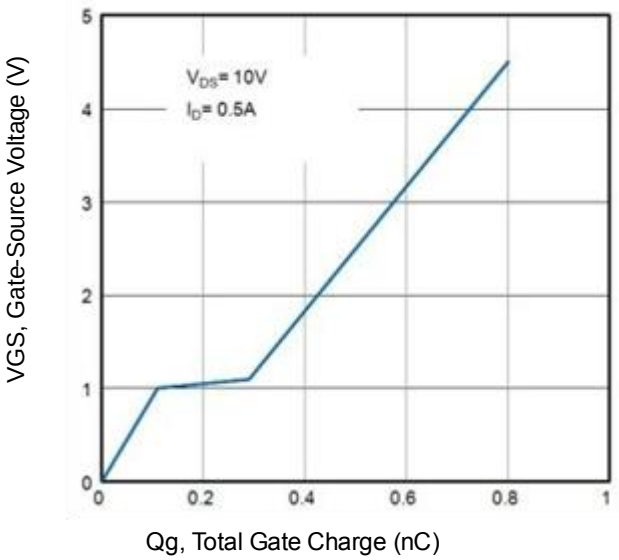


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

Typical Characteristics: P-Channel

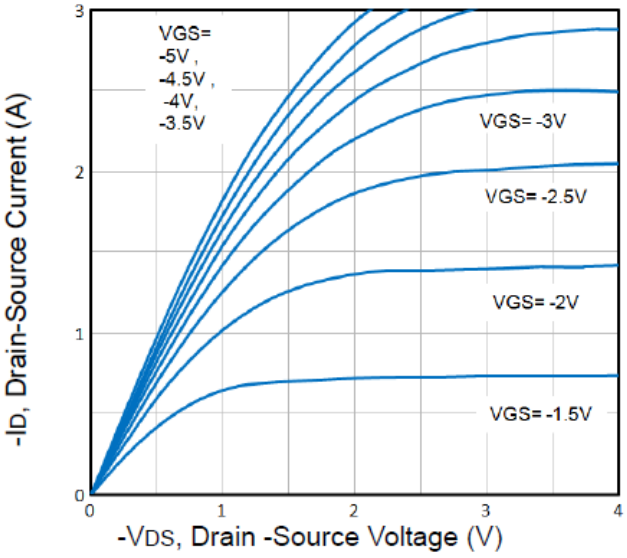


Fig1. Typical Output Characteristics

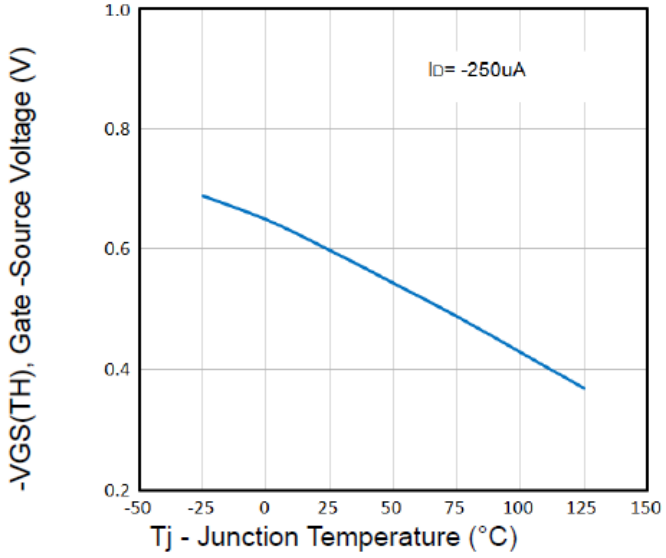


Fig2. Normalized Threshold Voltage Vs. Temperature

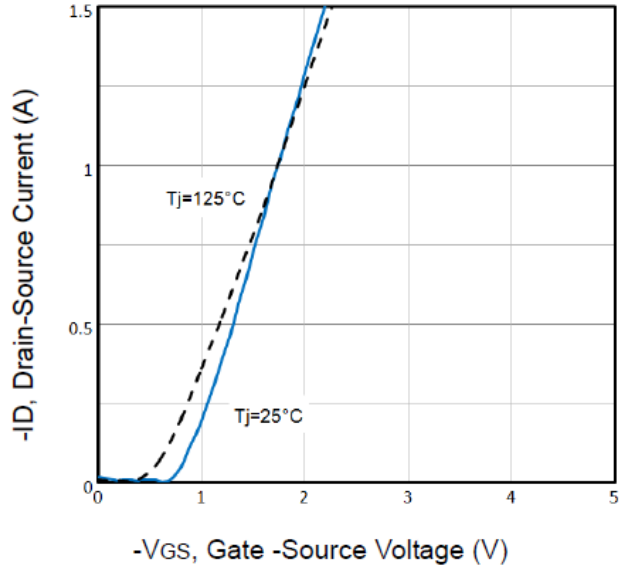


Fig3. Typical Transfer Characteristics

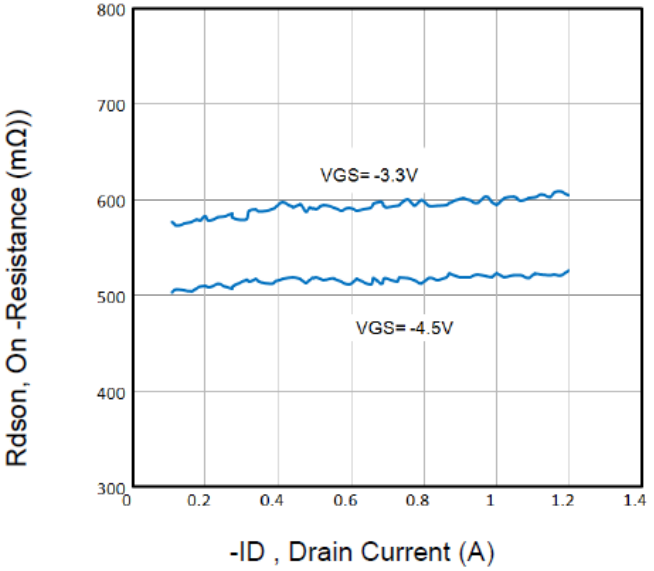


Fig4. On-Resistance vs. Drain Current and Gate

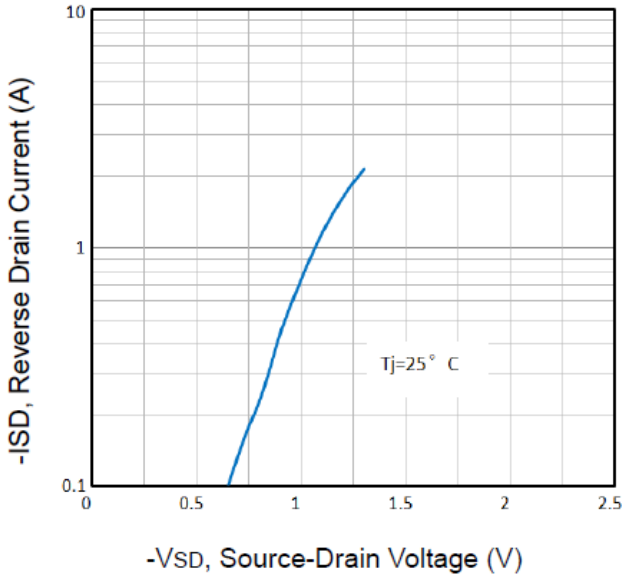


Fig5. Typical Source-Drain Diode Forward Voltage

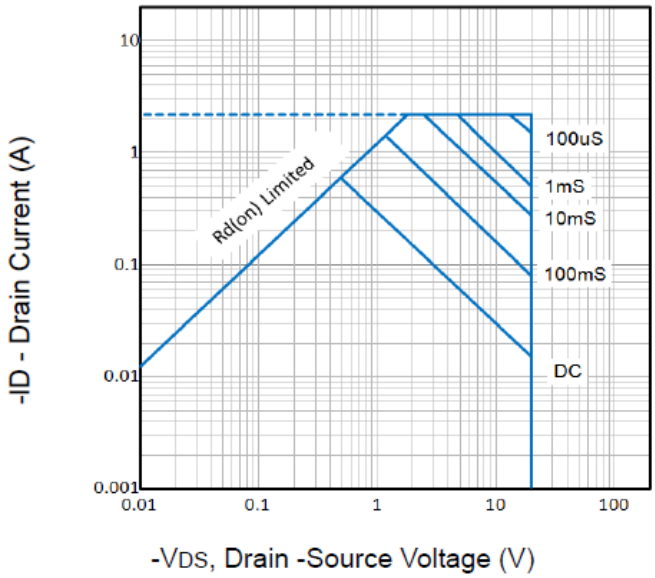


Fig6. Maximum Safe Operating Area

Typical Characteristics: P-Channel

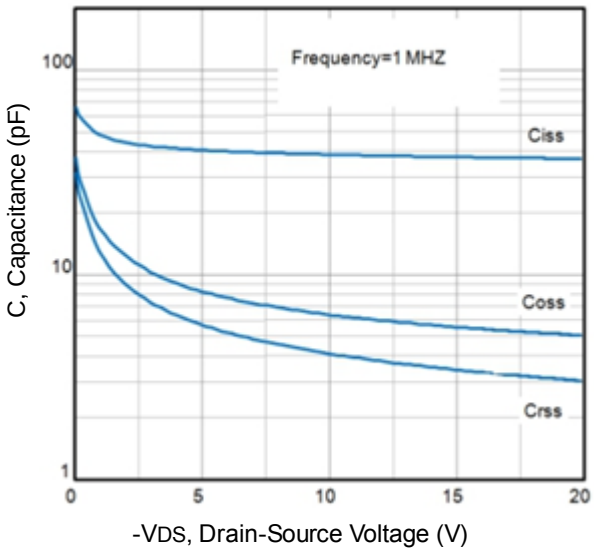


Fig7. Typical Capacitance Vs. Drain-Source Voltage

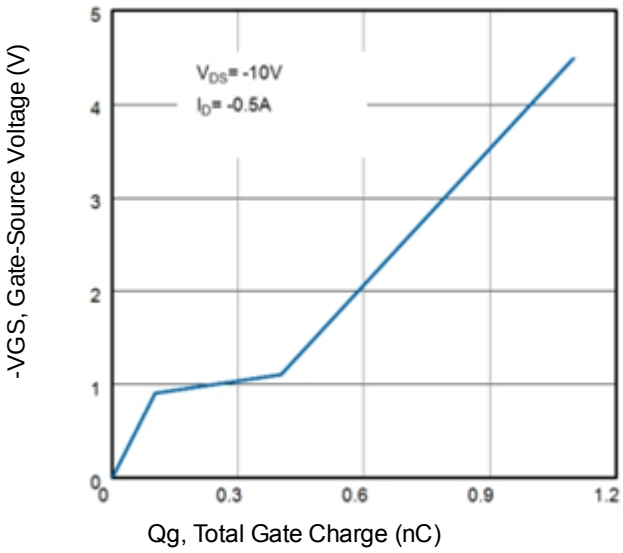
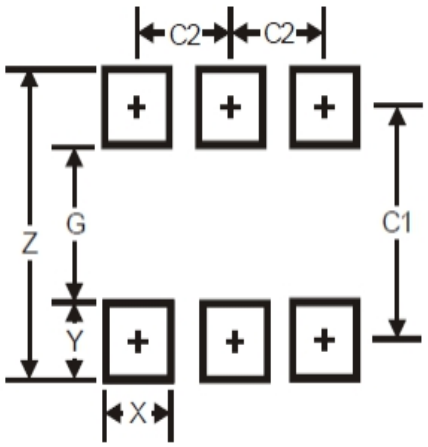
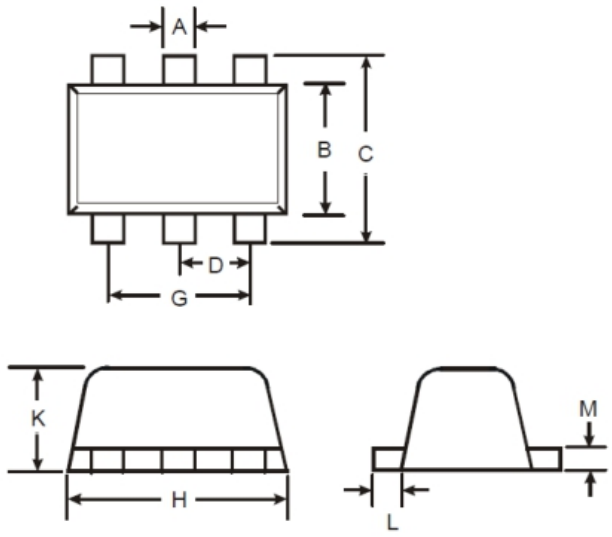


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

SOT563 Mechanical Data



Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5



SOT563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

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