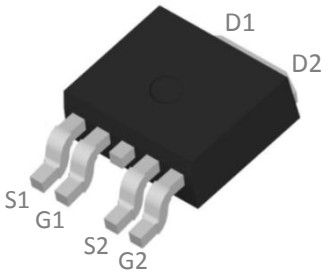
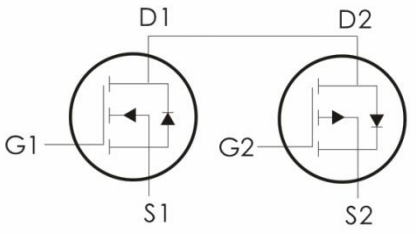
Description：

This N+P Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.





Features：

N-Channel:V_{DS}=100V,I_D=12 A,$R_{DS(ON)}$<120m Ω @V_{GS}=10V

$R_{DS(ON)}$<140m Ω @V_{GS}=4.5V

P-Channel: V_{DS}=-100V,I_D=-12A,$R_{DS(ON)}$<200m Ω @V_{GS}=-10V

$R_{DS(ON)}$<250m Ω @V_{GS}=-4.5V

1) Low gate charge.
2) Green device available.
3) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
4) Excellent package for good heat dissipation.

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	N-Channel	P-Channel	Units
V_{DS}	Drain-Source Voltage	100	-100	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D	Continuous Drain Current TC=25℃	12	-12	A
	Continuous Drain Current-TC=100℃	9	9	
I_{DM}	Pulsed Drain Current	45.4	-50	
P_D	Power Dissipation,T_C=25℃	30	30	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150		℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case[2]	4	℃/W

Package Marking and Ordering Information：

Part NO.	Marking	Package
DOD5521	D5521	TO-252-4

N-CH Electrical Characteristics： (T_C=25℃ unless otherwise noted)

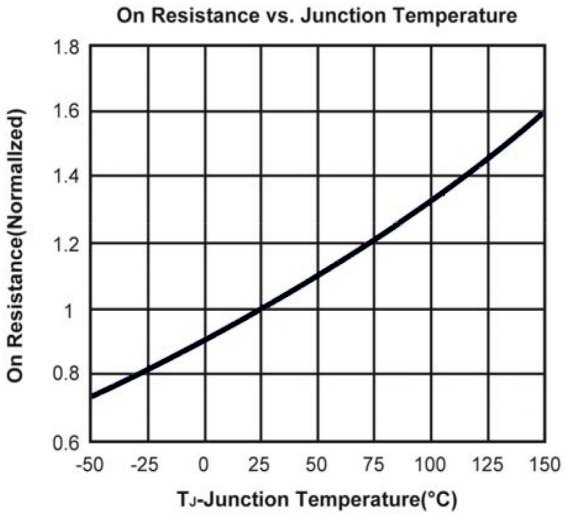
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=100V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics[3]						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1.2	---	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=8A	---	---	120	mΩ
		V_{GS}=4.5V,I_D=4A	---	---	140	
Dynamic Characteristics[4]						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	500	---	pF
C_{oss}	Output Capacitance		---	48	---	
C_{rss}	Reverse Transfer Capacitance		---	27	---	
Switching Characteristics[4]						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=30V,R_{GEN}=2.5Ω, V_{GS}=10V	---	12.4	---	ns
t_r	Rise Time[2,3]		---	12	---	ns
$t_{d(off)}$	Turn-Off Delay Time[2,3]		---	27.3	---	ns
t_f	Fall Time[2,3]		---	2.6	---	ns
Q_g	Total Gate Charge[2,3]	V_{GS}=10V, V_{DS}=30V, I_D=3A	---	16.8	---	nC
Q_{gs}	Gate-Source Charge[2,3]		---	5	---	nC
Q_{gd}	Gate-Drain “Miller” Charge[2,3]		---	4	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Drain Diode Forward Voltage[3]	V_{GS}=0V,I_S=1A, T_J=25℃	---	---	1.1	V
I_S	Continuous Source Current[2]	VD=VG=0V	---	---	12	A

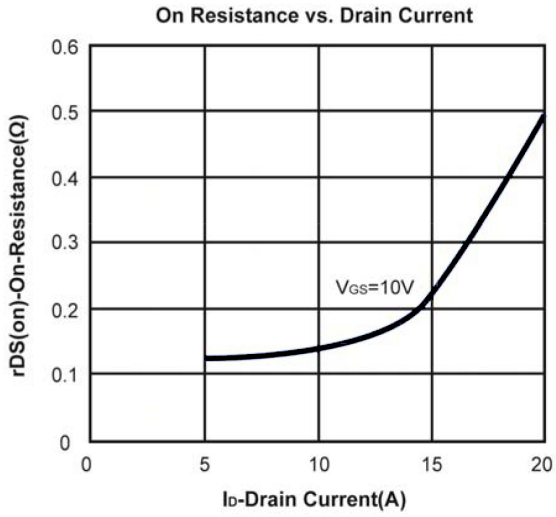
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current	VD=VG=0V	---	---	45.4	A

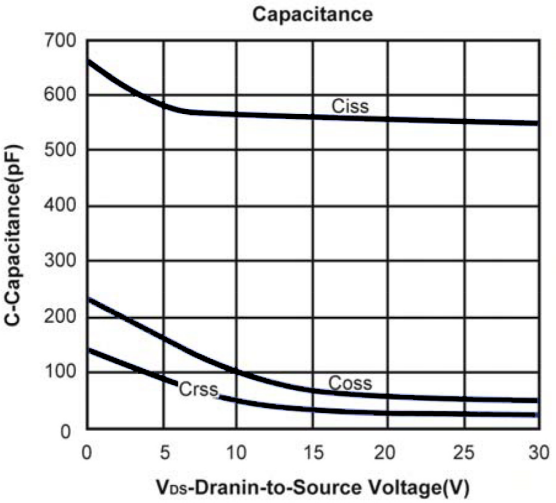
Notes:

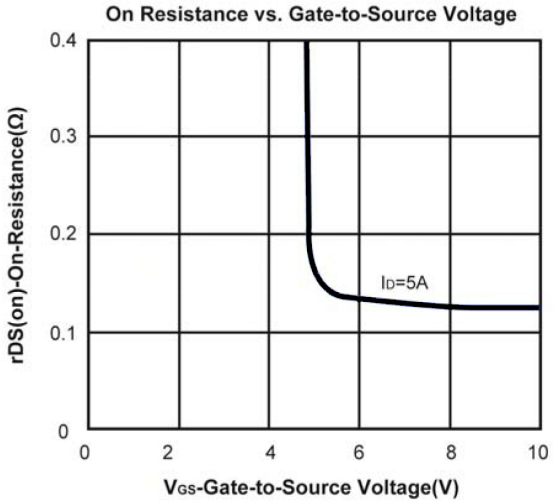
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

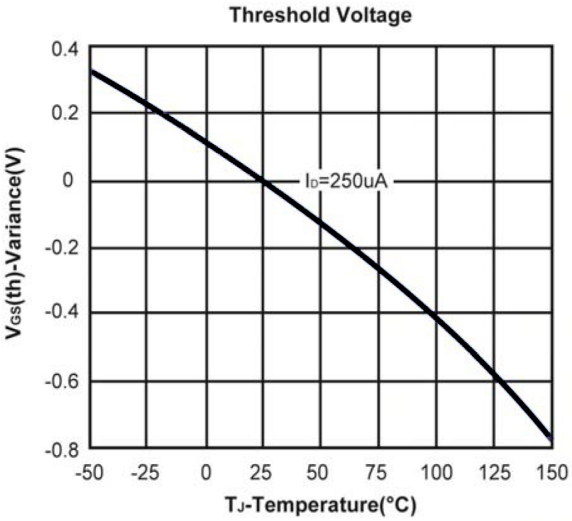
Typical Characteristics-N： (T_C=25℃ unless otherwise noted)

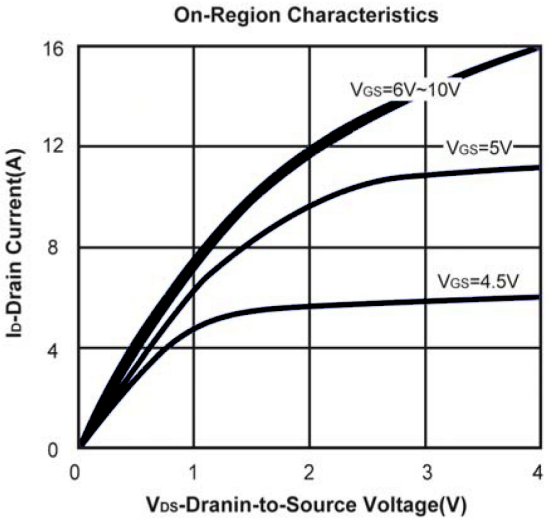


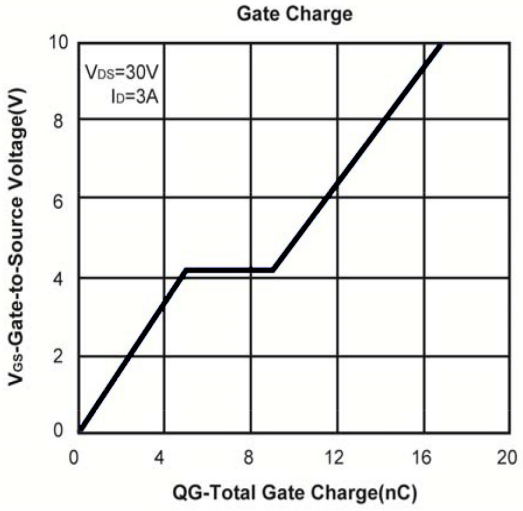


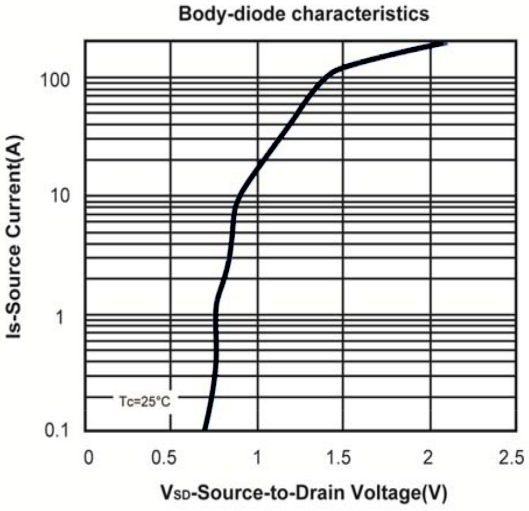


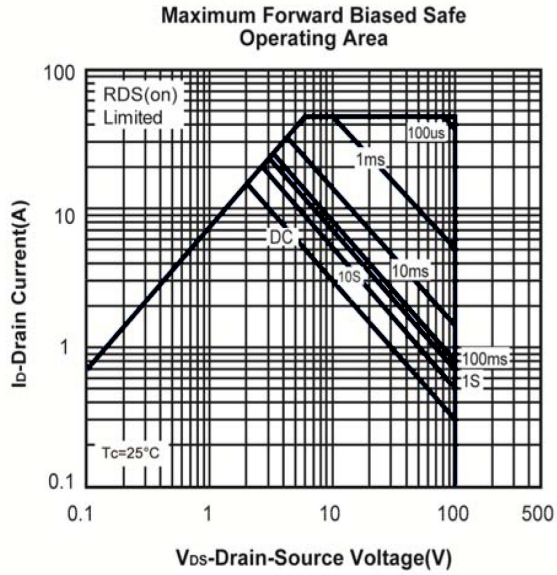


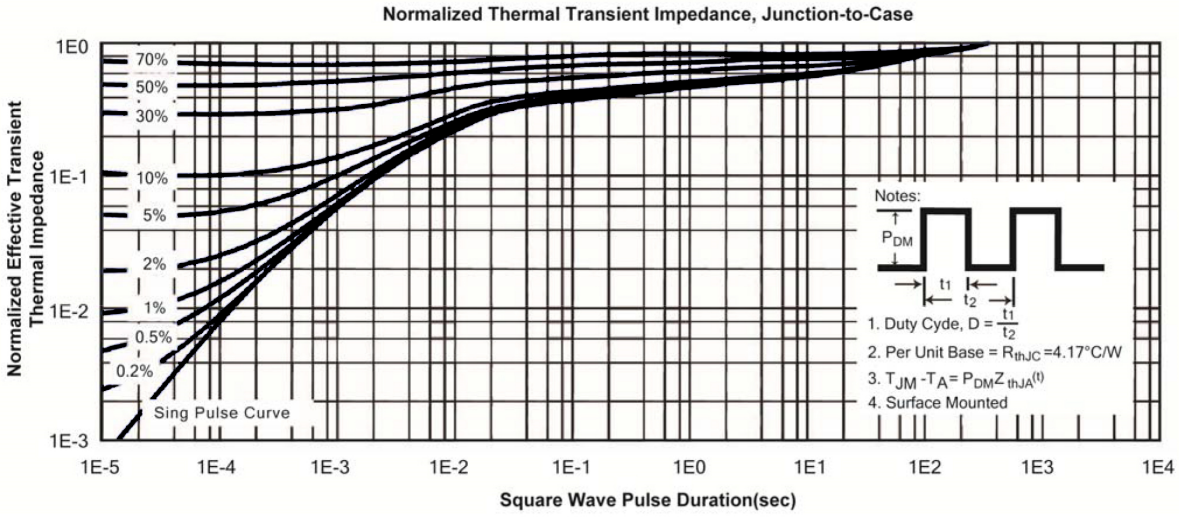

Threshold Voltage
VGS(th)-Variance(V)
ID=250uA
TJ-Temperature(°C)


On-Region Characteristics
ID-Drain Current(A)
VGS=6V~10V
VGS=5V
VGS=4.5V
VDS-Dranin-to-Source Voltage(V)


Gate Charge
VGS-Gate-to-Source Voltage(V)
VDS=30V
ID=3A
QG-Total Gate Charge(nC)


Body-diode characteristics
Is-Source Current(A)
Tc=25°C
VSD-Source-to-Drain Voltage(V)


Maximum Forward Biased Safe Operating Area
ID-Drain Current(A)
RDS(on) Limited
100us
1ms
DC
10S
10ms
100ms
1S
Tc=25°C
VDS-Drain-Source Voltage(V)


Normalized Thermal Transient Impedance, Junction-to-Case
Normalized Effective Transient Thermal Impedance
1E0
1E-1
1E-2
1E-3
70%
50%
30%
10%
5%
2%
1%
0.5%
0.2%
Sing Pulse Curve
Notes:
PDM
t1
t2
1. Duty Cyde, D = t1/t2
2. Per Unit Base = RthJC =4.17°C/W
3. TJM -TA= PDMZthJA(t)
4. Surface Mounted
1E-5
1E-4
1E-3
1E-2
1E-1
1E0
1E1
1E2
1E3
1E4
Square Wave Pulse Duration(sec)

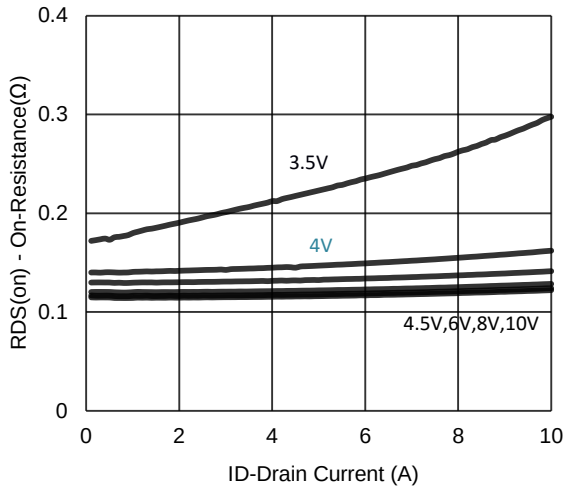
P-CH Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	-100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-100V	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics[3]						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	-1.2	---	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[2,]	V_{GS}=-10V,I_D=-7A	---	---	200	mΩ
		V_{GS}=4.5V,I_D=-6A	---	---	250	
Dynamic Characteristics[4]						
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz	---	1485	---	pF
C_{oss}	Output Capacitance		---	126	---	
C_{rss}	Reverse Transfer Capacitance		---	103	---	
Switching Characteristics[4]						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=-50V, I_D=-7A, R_{GEN}=6Ω, V_{GS}=-10V	---	7	---	ns
t_r	Rise Time[2,3]		---	7	---	ns
$t_{d(off)}$	Turn-Off Delay Time[2,3]		---	62	---	ns
t_f	Fall Time[2,3]		---	25	---	ns
Q_g	Total Gate Charge[2,3]	V_{GS}=-4.5V, V_{DS}=-50V, I_D=-7A	---	24	---	nC
Q_{gs}	Gate-Source Charge[2,3]		---	6.8	---	nC
Q_{gd}	Gate-Drain “Miller” Charge[2,3]		---	11	---	nC
Drain-Source Diode Characteristics						
I_s	MaximumContinuousDraintoSource Diode Forward Current	VD=VG=0V	---	---	-12	A
I_{sM}	Maximum Pulsed Drain to Source Diode Forward Current	VD=VG=0V	---	---	-50	A
V_{SD}	Drain to Source Diode Forward Voltage	VGS = 0V, IS = -7A	---	---	-0.86	V

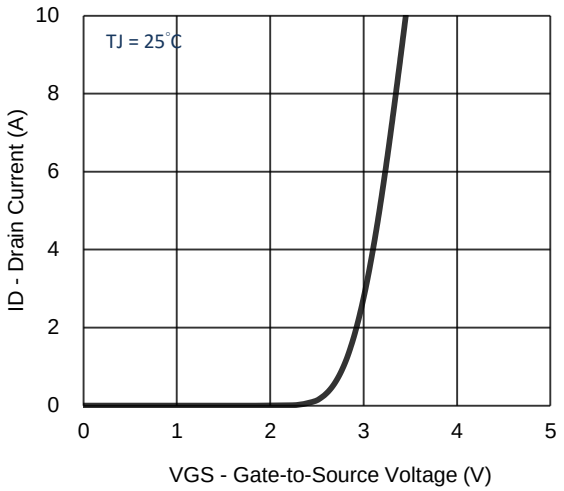
Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

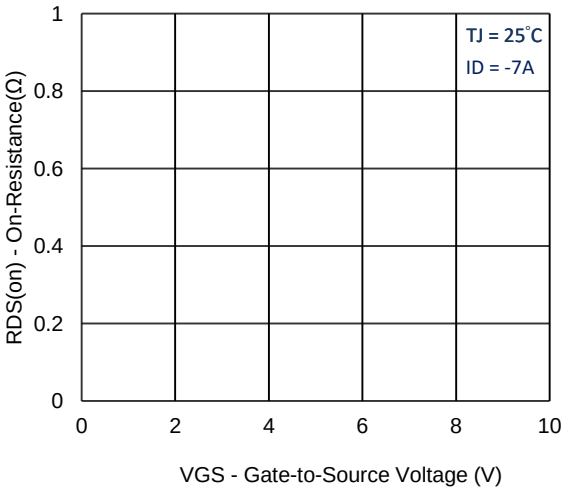
Typical Characteristics-P： (T_C=25℃ unless otherwise noted)



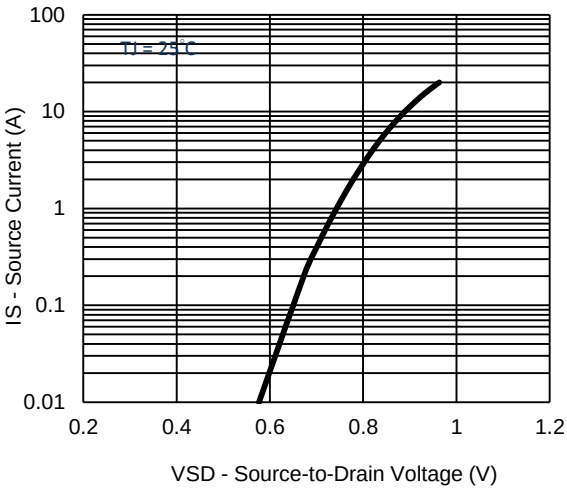
1. On-Resistance vs. Drain Current



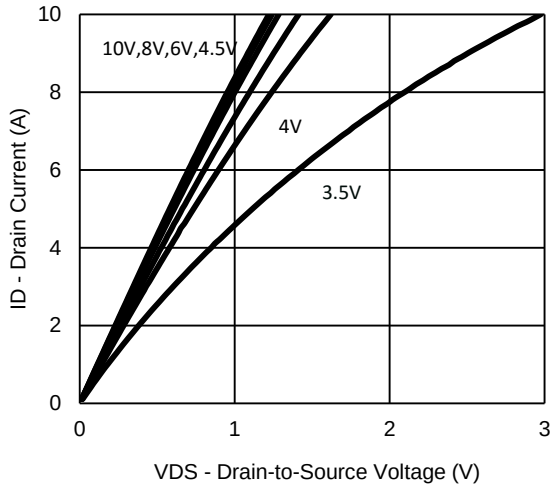
2. Transfer Characteristics



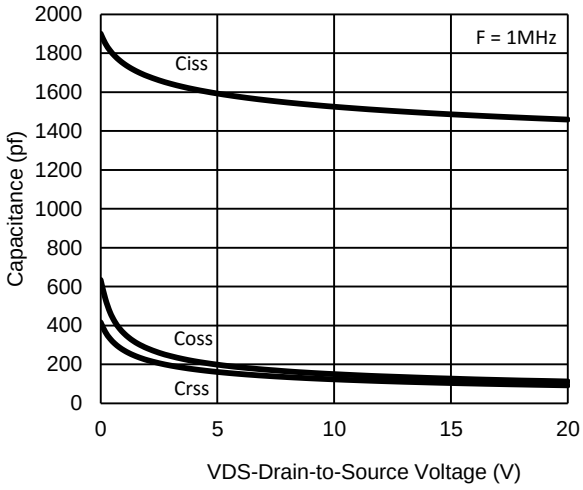
3. On-Resistance vs. Gate-to-Source Voltage



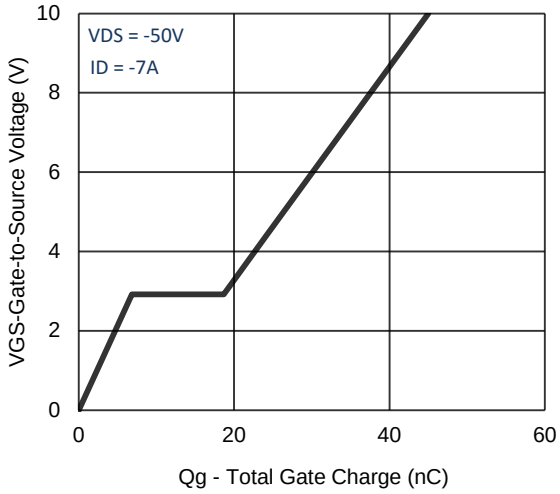
4. Drain-to-Source Forward Voltage



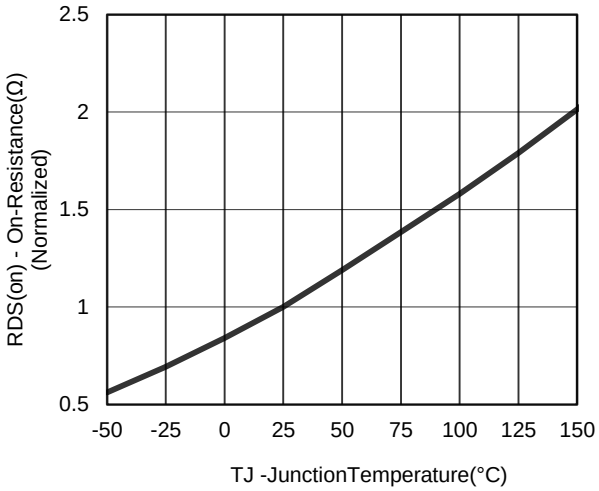
5. Output Characteristics



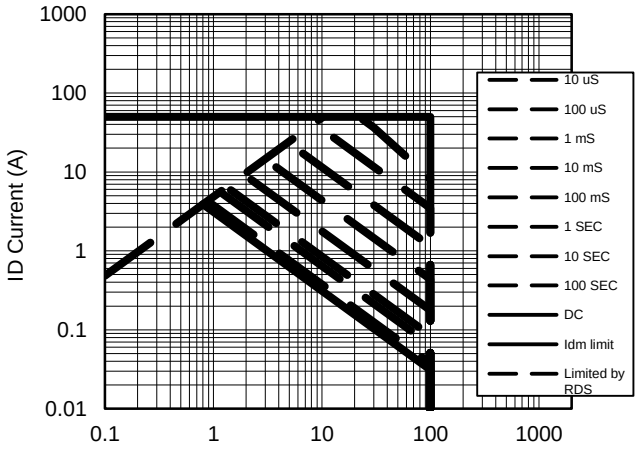
6. Capacitance



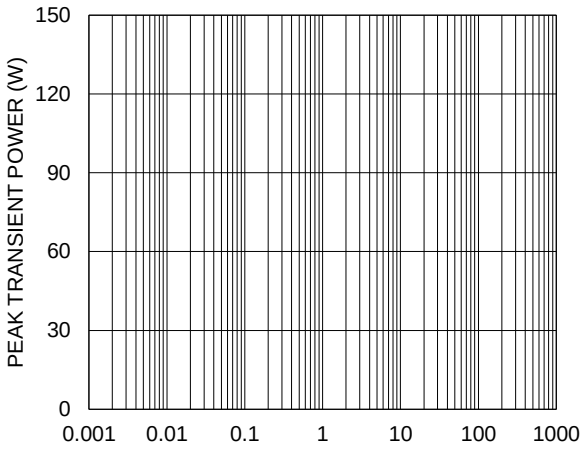
7. Gate Charge



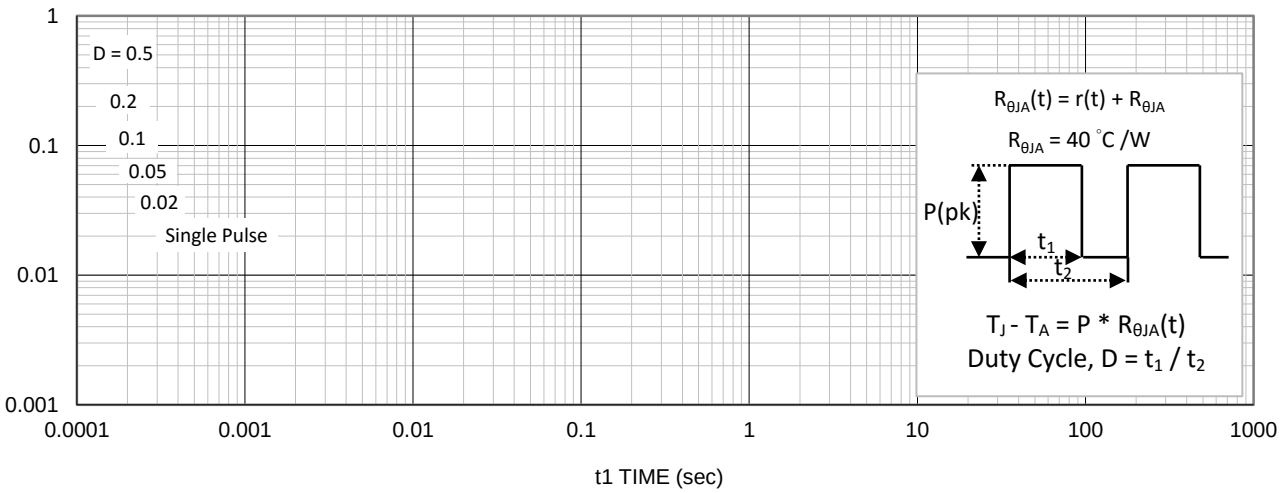
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient