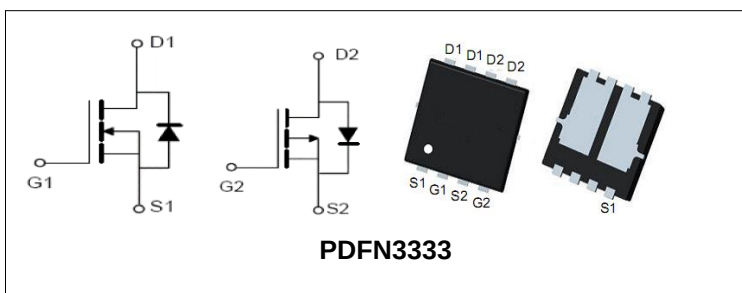


**N And P- Channel Enhancement Mode Power MOSSFET****Features**

- Improved dv/dt Capability, High Ruggedness
- Maximum Junction Temperature Range (150°C)

Applications

- DC Fan
- Brushless motor
- Optimized for Power Management Applications for Portable Products, such as H-bridge, Inverters Car Charger and Others



N-Channel		
BVDSS	30	V
ID	15	A
RDSON@VGS=10V	16	mΩ
RDSON@VGS=4.5V	24	mΩ

P-Channel		
BVDSS	-30	V
ID	-11	A
RDSON@VGS=-10V	25	mΩ
RDSON@VGS=-4.5V	36	mΩ

Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PTQ15C03B	PDFN3333	PTQ15C03	13inch	5000PCS	50000PCS

Absolute Maximum Ratings

Symbol	Parameter		N-Channel	P-Channel	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)					
V _{(BR)DSS}	Drain-Source Breakdown Voltage		30	-30	V
V _{GS}	Gate-Source Voltage		±20	±20	V
T _J	Maximum Junction Temperature		150		°C
T _{STG}	Storage Temperature Range		-50 to 150		°C
I _S	Diode Continuous Forward Current	TC =25°C	15	-11	A
Mounted on Large Heat Sink					
I _{DM}	Pulse Drain Current Tested (Silicon Limit) (Note1)	TC =25°C	60	-44	A
I _D	Continuous Drain current	TC=25°C	15	-11	A
P _D	Maximum Power Dissipation	TC =25°C	15		W
R _{θJC}	Thermal Resistance Junction-to-Case (Note2)		8.3		°C/W



N And P- Channel Enhancement Mode Power MOSSFET

N-Channel Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	30	--	--	V
I _{DSS}	Zero Gate Voltage Drain current	VDS=30V,VGS=0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.2	--	2.2	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note3)	VGS=10V, ID=10A	--	16	23	mΩ
		VGS=4.5V, ID=6A	--	24	36	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) (Note5)						
C _{iss}	Input Capacitance	VDS= 15V, VGS=0V, F=1MHz	--	517	--	pF
C _{oss}	Output Capacitance		--	63	--	pF
C _{rss}	Reverse Transfer Capacitance		--	51	--	pF
Q _g	Total Gate Charge	VDS= 15V, ID= 5A, VGS= 10V	--	11.4	--	nC
Q _{gs}	Gate-Source Charge		--	1.9	--	nC
Q _{gd}	Gate-Drain Charge		--	3.6	--	nC
Switching Characteristics (Note5)						
t _{d(on)}	Turn-on Delay Time	VDD= 15V, ID=5A, VGS=10V, RG=3Ω	--	3.9	--	nS
t _r	Turn-on Rise Time		--	5.6	--	nS
t _{d(off)}	Turn-off Delay Time		--	31	--	nS
t _f	Turn-off Fall Time		--	4.8	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	IS=15A,VGS=0V	--	--	1.2	V



N And P- Channel Enhancement Mode Power MOSSFET

P-Channel Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain- Source Breakdown Voltage	VGS=0V ID=-250μA	-30	--	--	V
I _{DSS}	Zero Gate Voltage Drain current	VDS=-30V,VGS=0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.0	--	-2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note3)	VGS=-10V, ID=-8A	--	25	36	mΩ
		VGS=-4.5V, ID=-5A	--	36	48	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) (Note4)						
C _{iss}	Input Capacitance	VDS= -15V, VGS=0V, F=1MHz	--	890	--	pF
C _{oss}	Output Capacitance		--	112	--	pF
C _{rss}	Reverse Transfer Capacitance		--	90	--	pF
Q _g	Total Gate Charge	VDS= -15V, ID= -5A, VGS= -10V	--	17	--	nC
Q _{gs}	Gate-Source Charge		--	2.9	--	nC
Q _{gd}	Gate-Drain Charge		--	3.5	--	nC
Switching Characteristics (Note4)						
t _{d(on)}	Turn-on Delay Time	VDD=- 15V, ID=-5A, VGS=-10V, RG=2.7Ω	--	4.4	--	nS
t _r	Turn-on Rise Time		--	2.2	--	nS
t _{d(off)}	Turn-off Delay Time		--	37	--	nS
t _f	Turn-off Fall Time		--	27	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	IS=-11A,VGS=0V	--	--	-1.2	V

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
4. Guranteed by design, not subject to production testing.



N And P- Channel Enhancement Mode Power MOSSFET

Typical Characteristics (N-Channel)

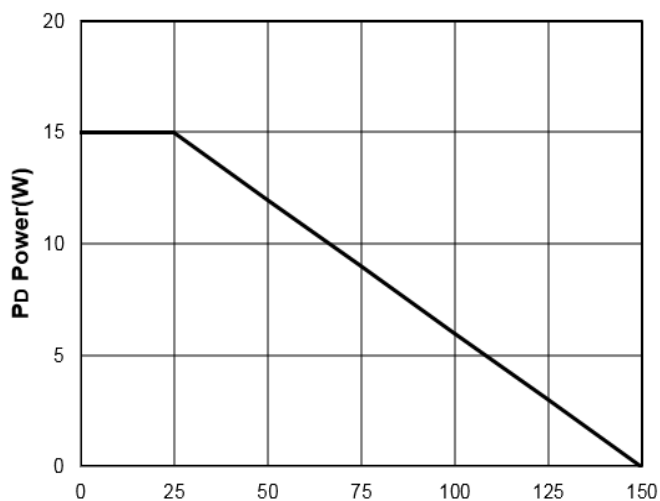


Figure1: Tj Junction Temperature (°C)

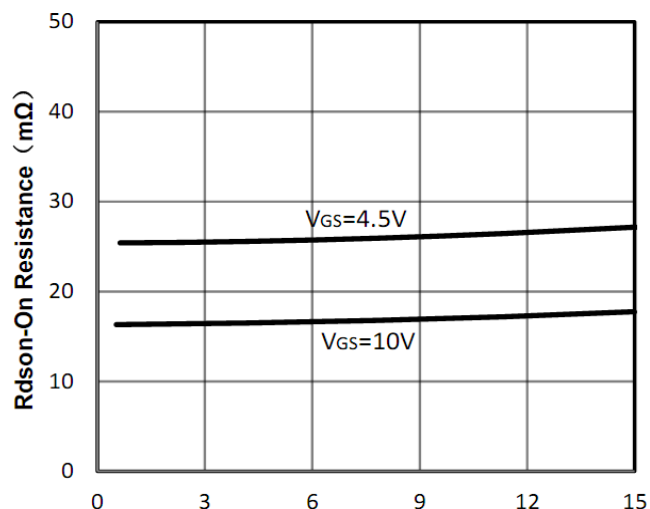


Figure2: Id Drain Current (A)

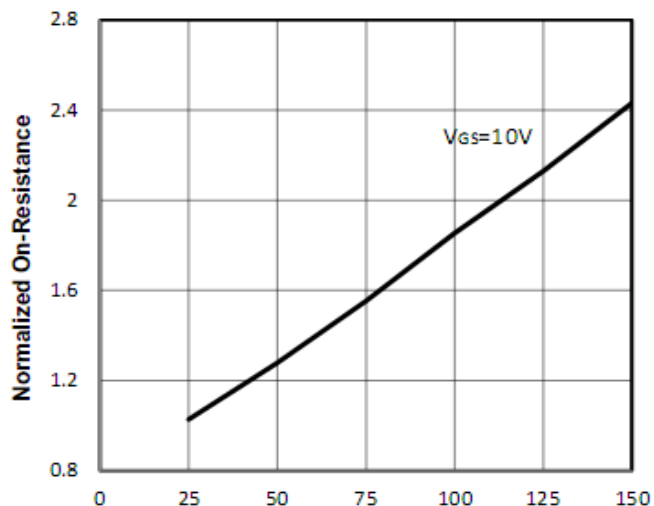


Figure3: Tj Junction Temperature (°C)

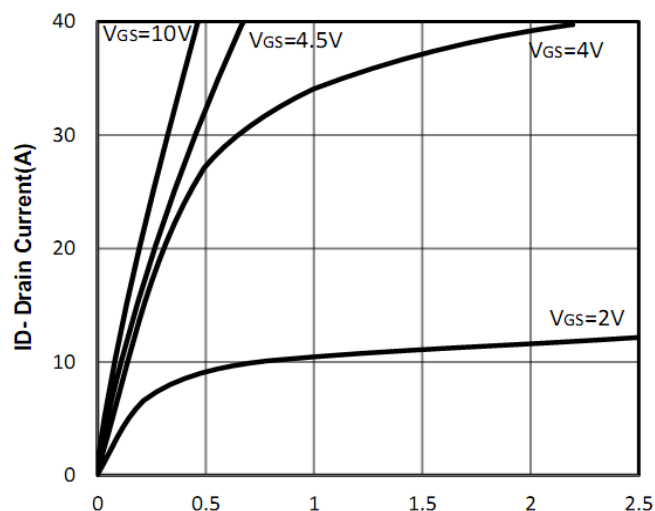


Figure4: Vds Drain-Source Voltage (V)

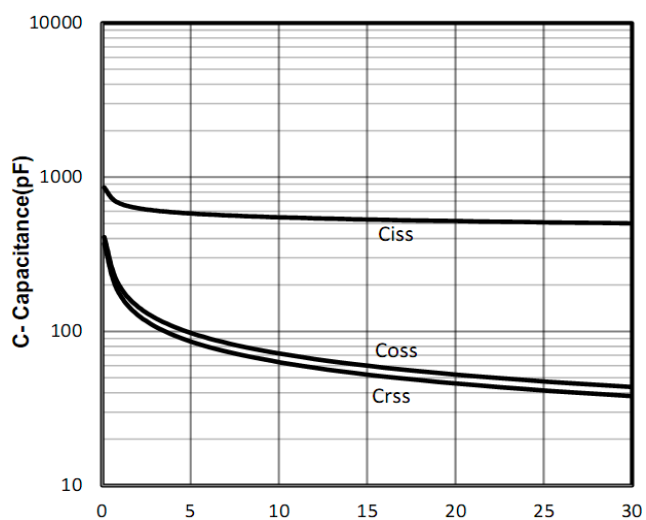


Figure5: Vds Drain-Source Voltage (V)

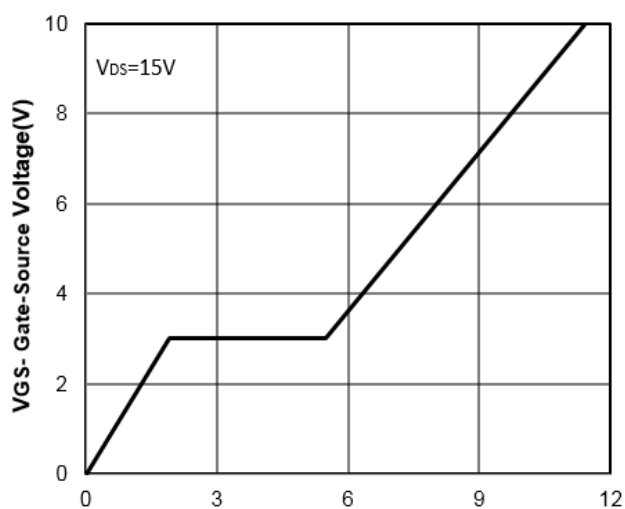


Figure6: Qg Gate Charge (nC)



N And P- Channel Enhancement Mode Power MOSSFET

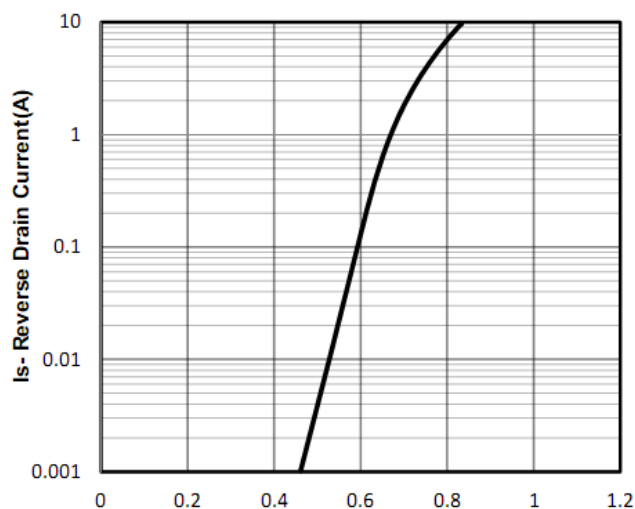


Figure7: Vsd Source-Drain Voltage (V)

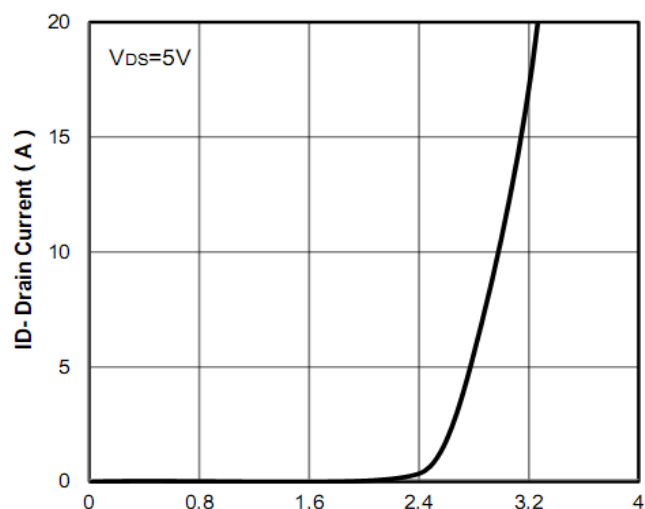


Figure8: Vgs Gate-Source Voltage (V)

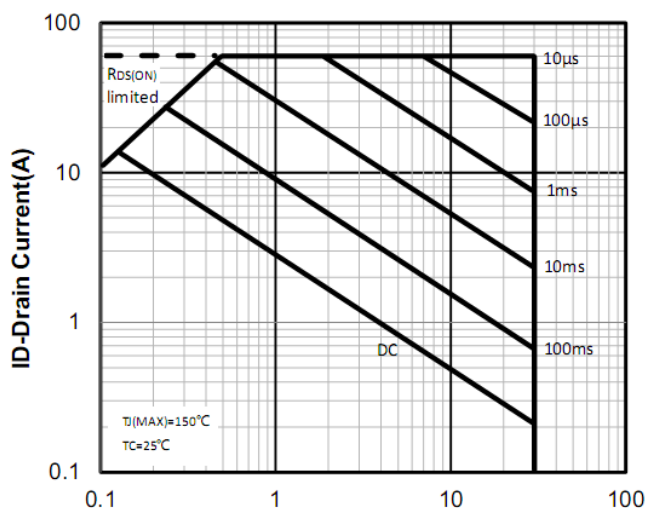


Figure9: Vds Drain -Source Voltage (V)

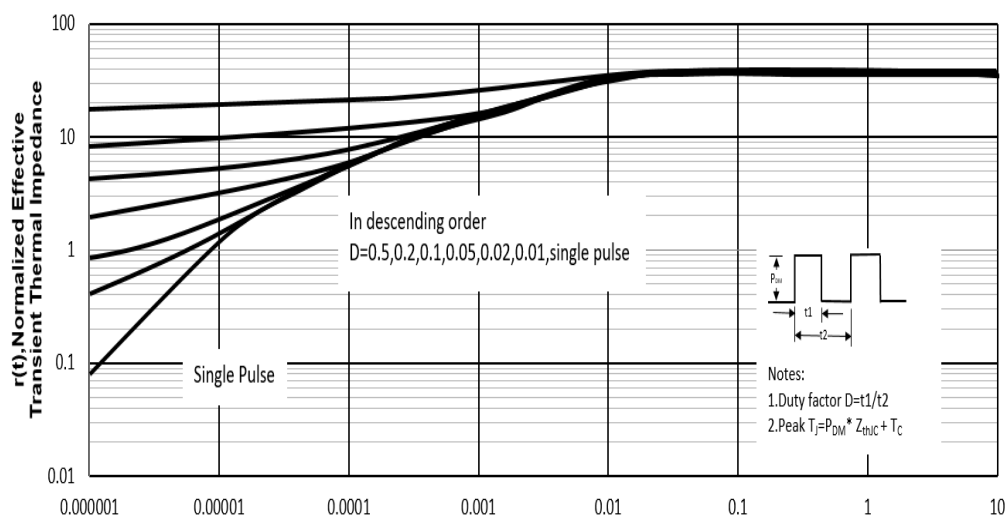


Figure10: Square Wave Pulse Duration (sec)



N And P- Channel Enhancement Mode Power MOSSFET

Test Circuit and Waveform (N-Channel):

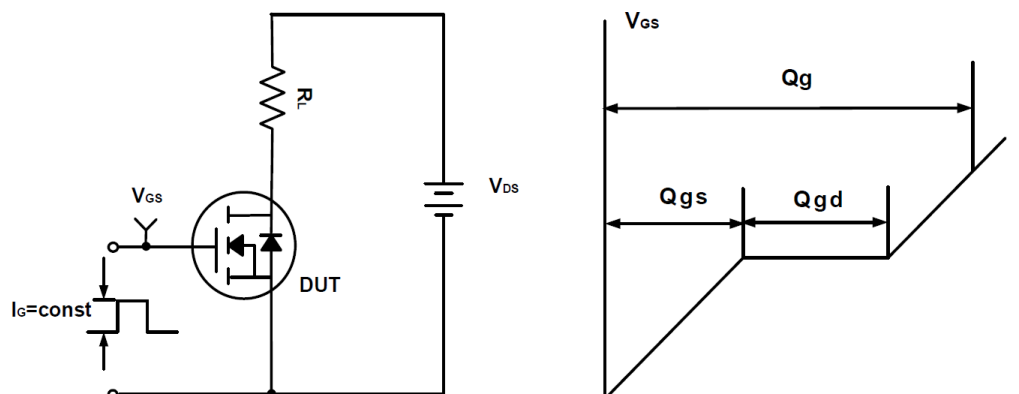


Figure A Gate Charge Test Circuit & Waveforms

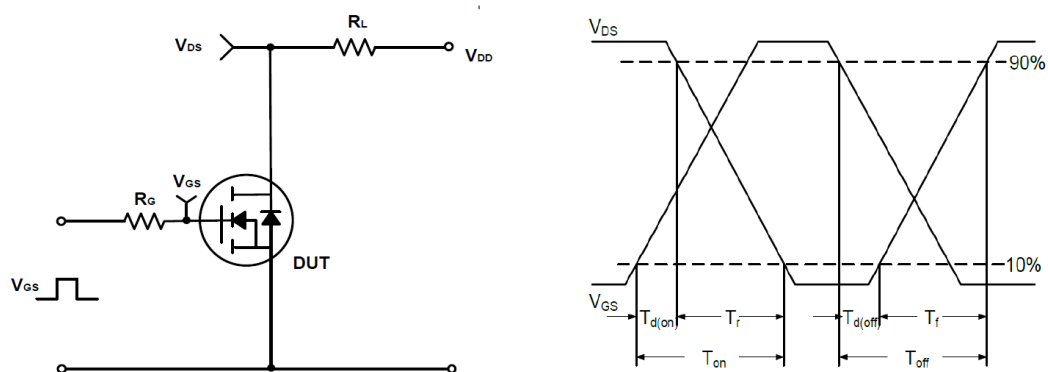


Figure B Switching Test Circuit & Waveforms



N And P- Channel Enhancement Mode Power MOSSFET

Typical Characteristics (P-Channel)

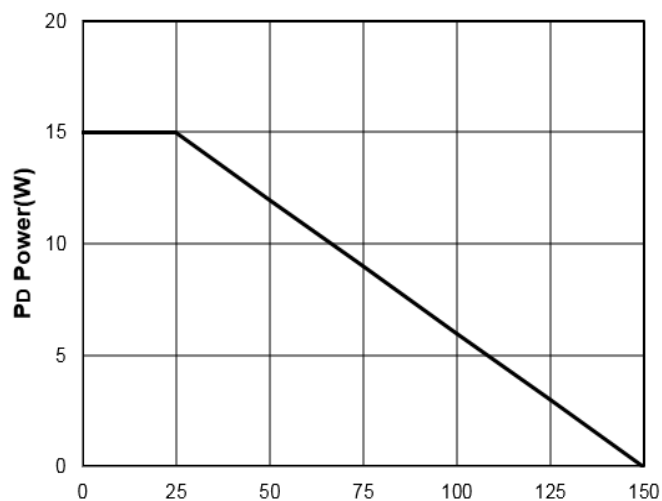


Figure11: T_j Junction Temperature (°C)

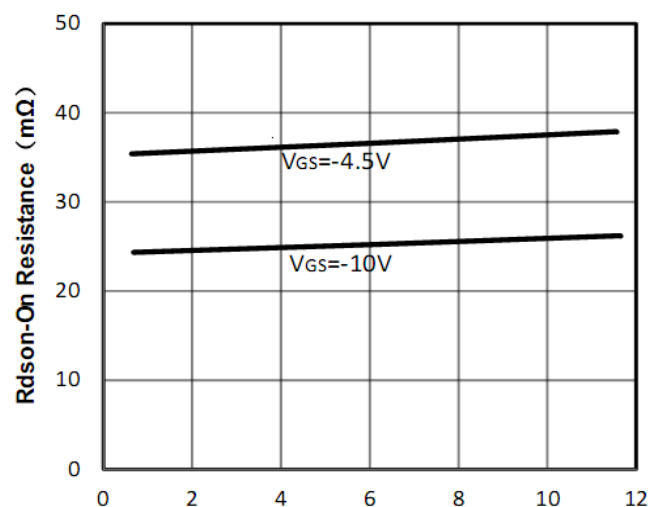


Figure12: -I_d Drain Current (A)

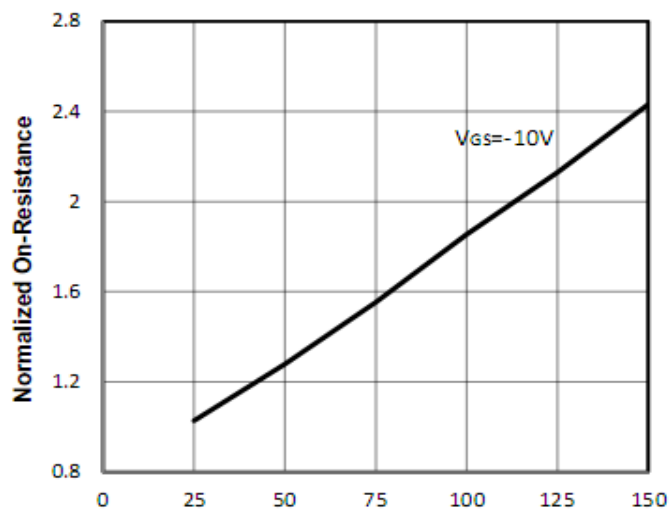


Figure13: T_j Junction Temperature (°C)

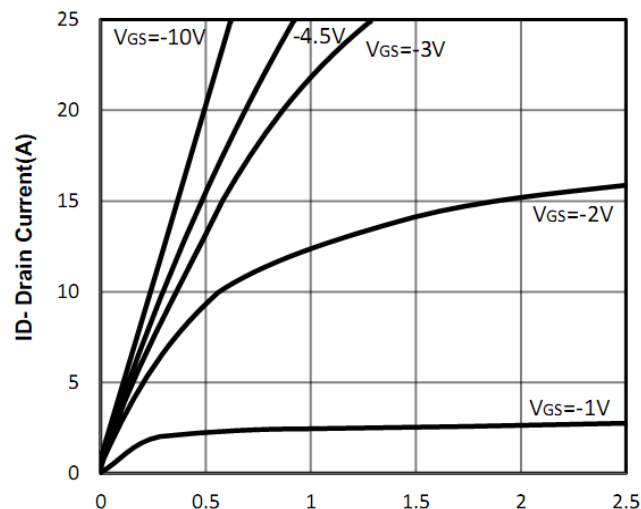


Figure14: -V_{ds} Drain-Source Voltage (V)

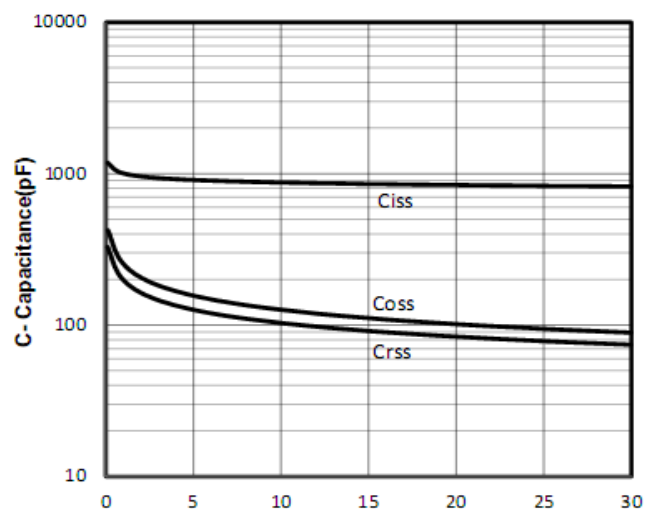


Figure15: -V_{ds} Drain-Source Voltage (V)

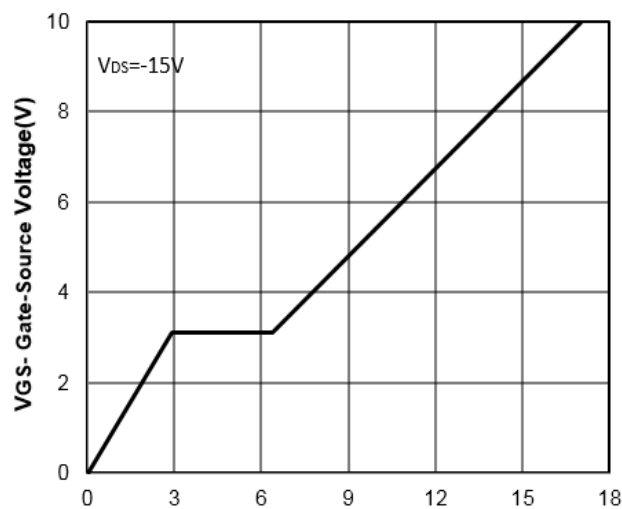


Figure16: Q_g Gate Charge (nC)



N And P- Channel Enhancement Mode Power MOSSFET

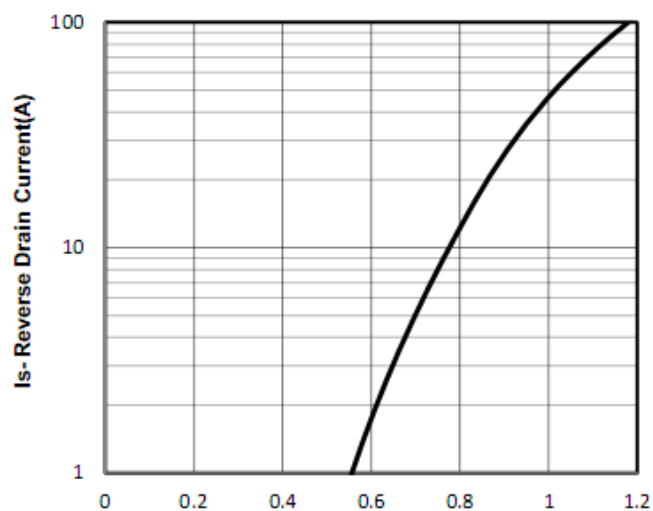


Figure17: Vsd Source-Drain Voltage (V)

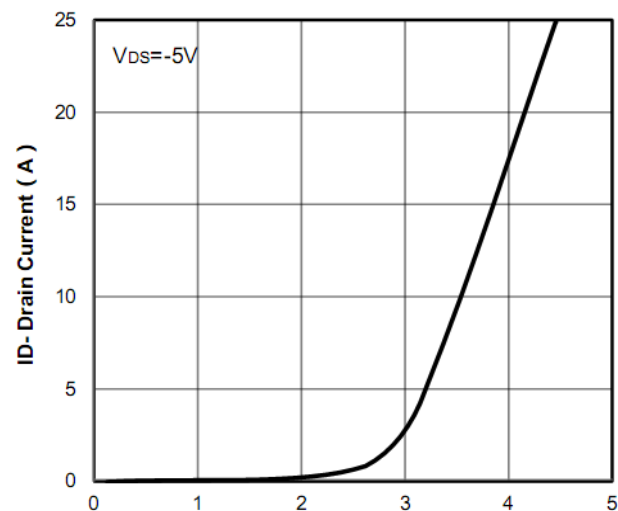


Figure18: -Vgs Gate-Source Voltage (V)

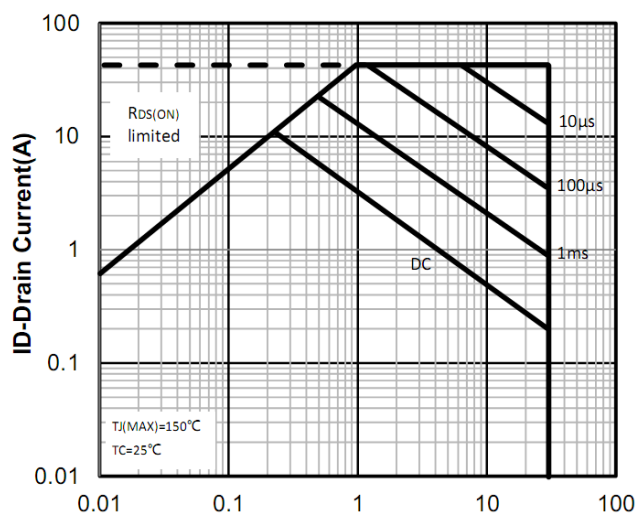


Figure19: -Vds Drain -Source Voltage (V)

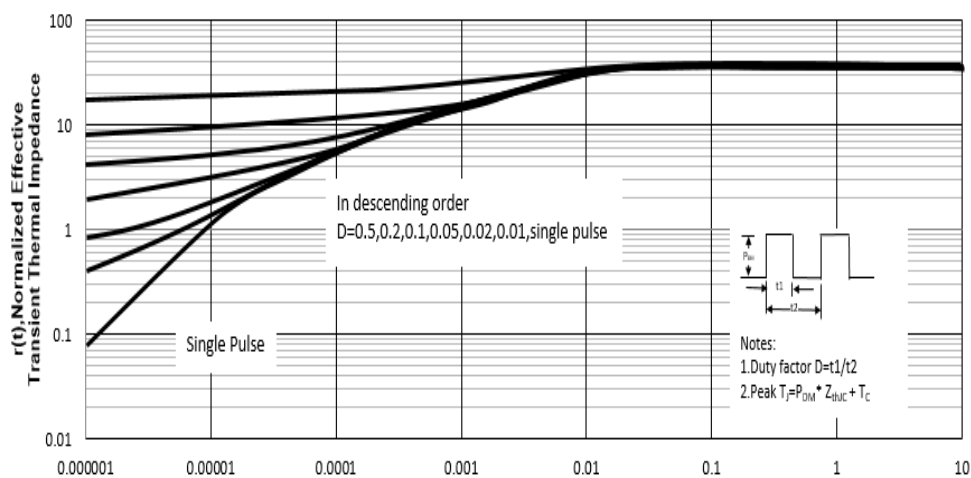
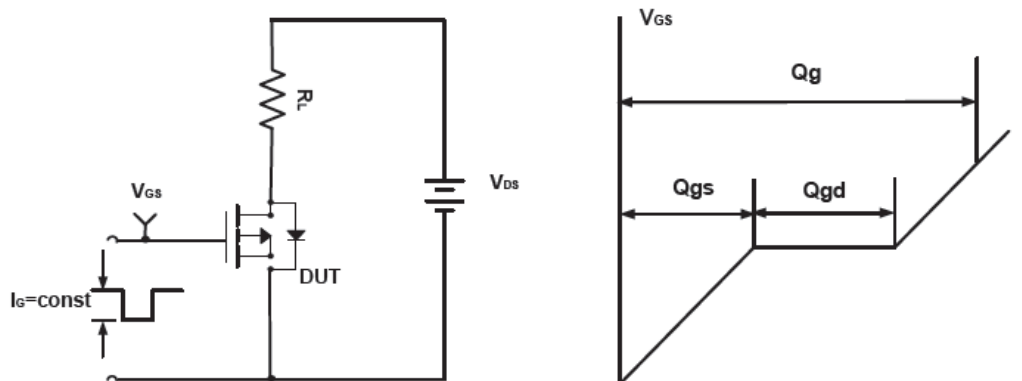
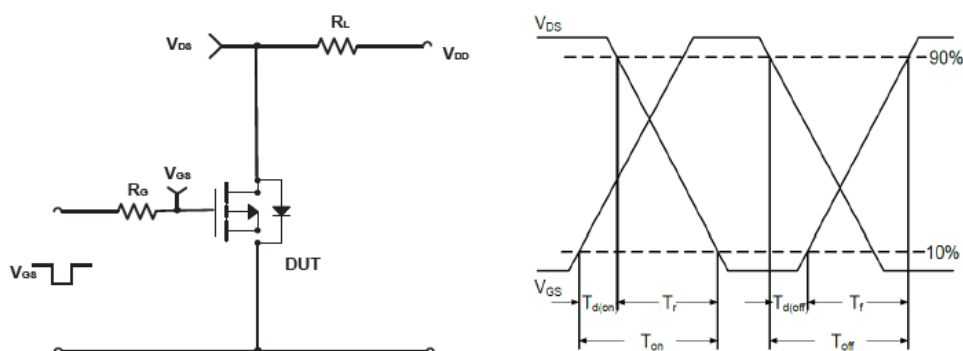
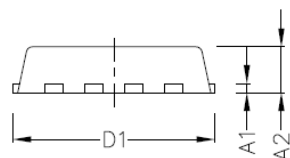
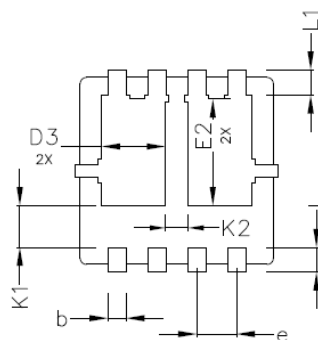
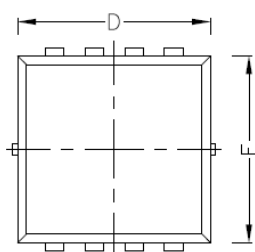


Figure20: Square Wave Pulse Duration (sec)

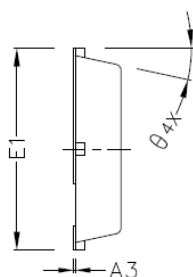
N And P- Channel Enhancement Mode Power MOSSFET
Test Circuit and Waveform(P-Channel):

Figure D Gate Charge Test Circuit & Waveforms

FigureE Switching Test Circuit & Waveforms

**N And P- Channel Enhancement Mode Power MOSSFET****PDFN3333 Package Outline Dimensions (Units: mm)**

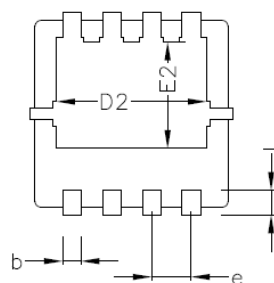
SIDE VIEW

BOTTOM VIEW
OPTION 2

TOP VIEW



SIDE VIEW

BOTTOM VIEW
OPTION 1

COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A1	0.152 BSC		
A2	0.650	0.750	0.850
A3	0.005	—	0.020
b	0.250	0.300	0.350
D	3.050	3.150	3.250
D1	3.200	3.300	3.400
D2	2.350	2.450	2.550
D3	0.935	1.035	1.135
E1	3.150	3.300	3.450
E	2.950	3.050	3.150
E2	1.635	1.735	1.835
e	0.650 TYPE		
L	0.300	0.400	0.500
θ	12° TYPE		
K1	0.680 REF		
K2	0.380 REF		
L1	0.410 REF		