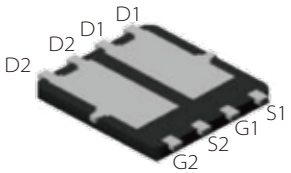
FEATURES

- Surface-mounted package
- Advanced trench cell design



PDFN3.3×3.3-8L

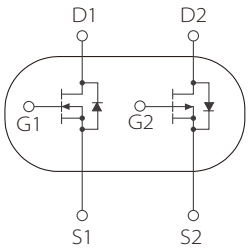
APPLICATION

- MB and NB
- Motor drivers
- Half – bridge Drivers

Marking

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS(T_a=25℃)

Parameter	Symbol	Conditions	Value	Unit
N-channel				
Drain-Source Voltage	V_{DS}	T_C=25℃	60	V
Gate-Source Voltage	V_{GS}	T_C=25℃	±20	V
Drain Current	I_D*	T_C=25℃,V_{GS}=10V	15.7	A
		T_C=100℃,V_{GS}=10V	9.9	A
Pulsed Drain Current	I_{DM}**,***	T_C=25℃,V_{GS}=10V	34	A
Single Pulsed Avalanche Energy	E_{AS}*	V_{DD}= 50 V , L= 1 mH	32	mJ
P-channel				
Drain-Source Voltage	V_{DS}	T_C=25℃	-60	V
Gate-Source Voltage	V_{GS}	T_C=25℃	±20	V
Drain Current	I_D*	T_C=25℃,V_{GS}=-10V	-12.2	A
		T_C=100℃,V_{GS}=-10V	-7.8	A
Pulsed Drain Current	I_{DM}**,***	T_C=25℃,V_{GS}=-10V	-34	A
Single Pulsed Avalanche Energy	E_{AS}*	V_{DD}=-50 V , L= 1 mH	60.5	mJ
Total Power Dissipation	P_{tot}	T_C=25℃	20.8	W
Junction and Storage Temperature Range	T_J,T_{STG}	-55 to 150		℃
Thermal Resistance- Junction to Ambient	$R_{\theta JA}$*	56.6		℃/W
Thermal Resistance- Junction to Case	$R_{\theta JC}$*	6		℃/W

Notes: * Surface Mounted on 1 in² pad area, t ⩽ 10 sec
** Pulse width⩽300us, duty cycle⩽2 %
*** limited by bonding wire

ELECTRICAL CHARACTERISTICS(T_a=25℃)

N-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=250μA	60			V
Zero Gate Voltage Source Current	I_{DSS}	V_{DS}=48V,V_{GS}=0V			1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=250μA	1		2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$ [a]	V_{GS}=10V,I_D=10A		32	40	mΩ
		V_{GS}=4.5V,I_D=5A		38	50	
Diode Characteristics						
Diode Forward Voltage	V_{SD} [a]	V_{GS}=0V,I_{SD}=10A			1.3	V
Reverse Recovery Time	t_{rr}	I_{SD} = 10A, dI_{SD}/dt = 100 A/μs		10		nS
Reverse Recovery Charge	Q_{rr}			7.8		nC
Dynamic Characteristics[b]						
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V Frequency = 1 MHz		1061		pF
Output Capacitance	C_{oss}			42		
Reverse Transfer Capacitance	C_{rss}			38		
Turn–On Delay Time	$t_{d(on)}$	V_{DS}=30V,R_L=3Ω V_{GEN}=10V,R_G=3.9Ω,I_D = 10A		5.8		nS
Turn–On Rise Time	t_r			11		
Turn–Off Delay Time	$t_{d(off)}$			16		
Turn–Off Fall Time	t_f			3.6		
Gate Charge Characteristics[b]						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=30V,I_{DS}=10A		19		nC
Gate Source Charge	Q_{gs}			5		
Gate Drain Charge	Q_{gd}			2.6		

P-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=-250μA	-60			V
Zero Gate Voltage Source Current	I_{DSS}	V_{DS}=-48V,V_{GS}=0V			-1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=-250μA	-1		-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$ [a]	V_{GS}=-10V,I_D=-8A		53	66	mΩ
		V_{GS}=-4.5V,I_D=-4A		65	85	
Diode Characteristics						
Diode Forward Voltage	V_{SD} [a]	V_{GS}=0V,I_{SD}=-8A			-1.3	V
Reverse Recovery Time	t_{rr}	I_{SD} = -8A, dI_{SD}/dt = 100 A/μs		14		nS
Reverse Recovery Charge	Q_{rr}			11		nC
Dynamic Characteristics[b]						
Input Capacitance	C_{iss}	V_{DS}=-30V,V_{GS}=0V Frequency = 1 MHz		1428		pF
Output Capacitance	C_{oss}			63		
Reverse Transfer Capacitance	C_{rss}			53		
Turn–On Delay Time	$t_{d(on)}$	V_{DS}=-30V,R_L=3.75Ω V_{GEN}=-10V,R_G=3.9Ω,I_D = -8A		5		nS
Turn–On Rise Time	t_r			17		
Turn–Off Delay Time	$t_{d(off)}$			97		
Turn–Off Fall Time	t_f			42		
Gate Charge Characteristics[b]						
Total Gate Charge	Q_g	V_{GS}=-10V,V_{DS}=-30V,I_{DS}=-8A		24		nC
Gate Source Charge	Q_{gs}			6		
Gate Drain Charge	Q_{gd}			2.8		

Notes: a : Pulse test ; pulse width≤300us, duty cycle≤2 %
b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

N-Channel

Figure1: Power Capability

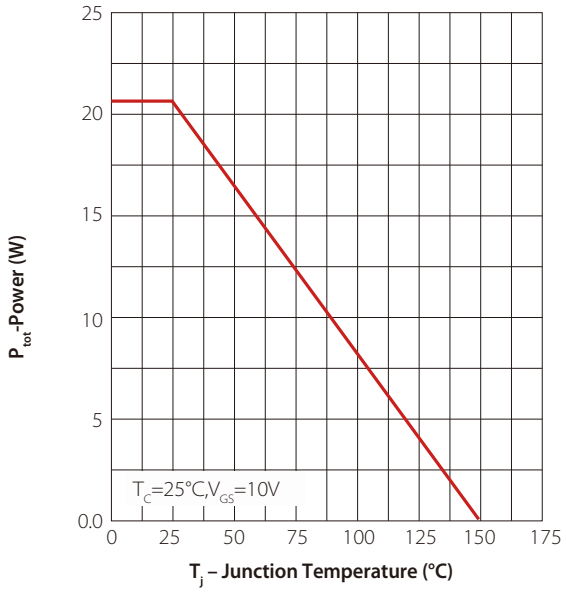


Figure2: Current Capability

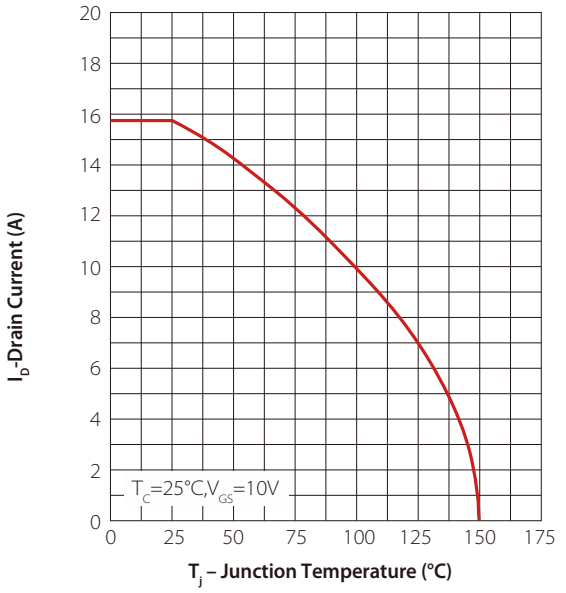


Figure3: Safe Operation Area

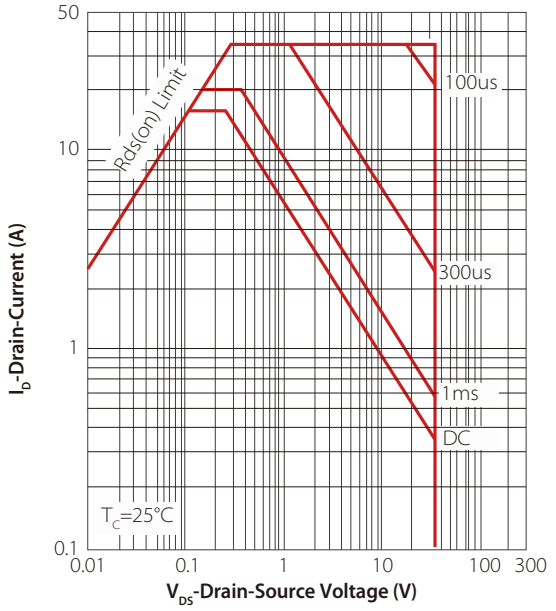


Figure 4: Transient Thermal Impedance

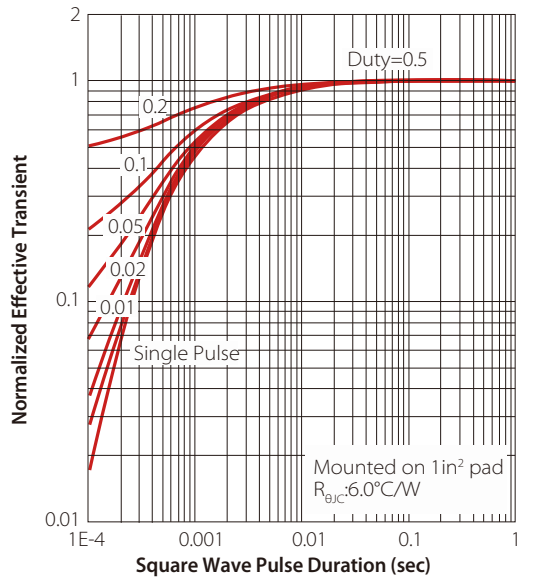


Figure 5:Output Characteristics

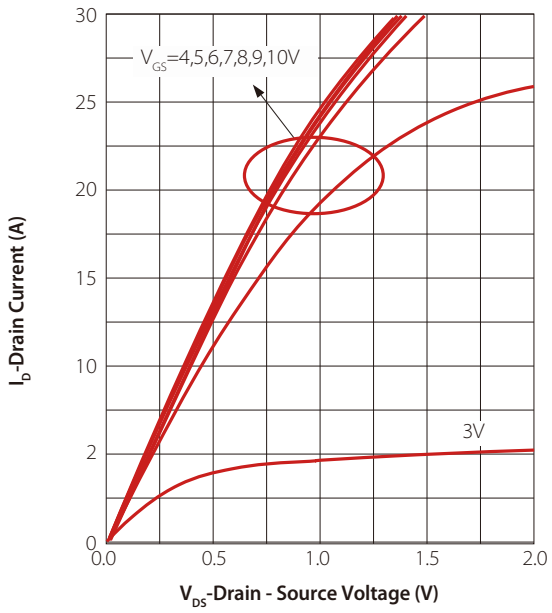


Figure 6: On Resistance

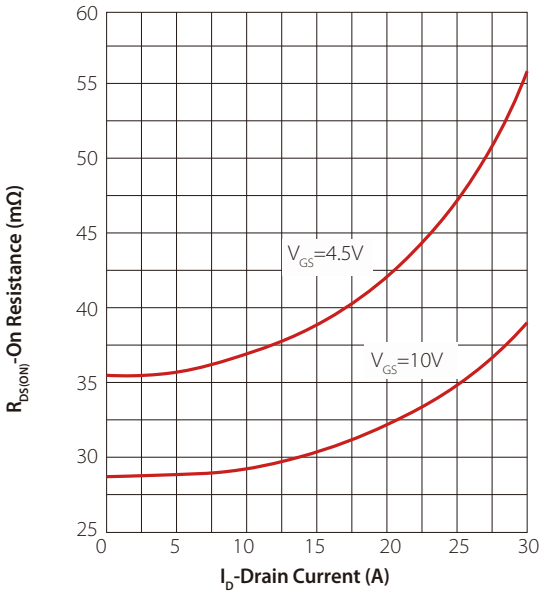


Figure 7:Transfer Characteristics

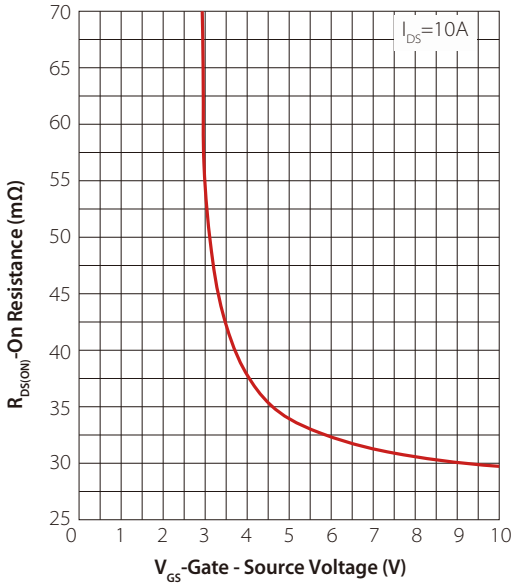


Figure 8: Normalized Threshold Voltage

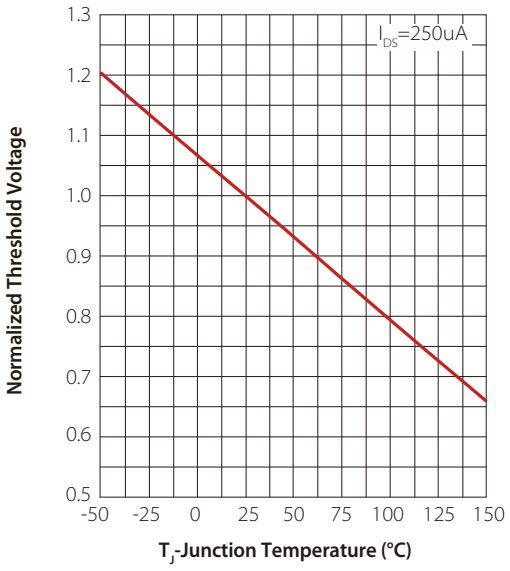


Figure 9:Normalized On Resistance

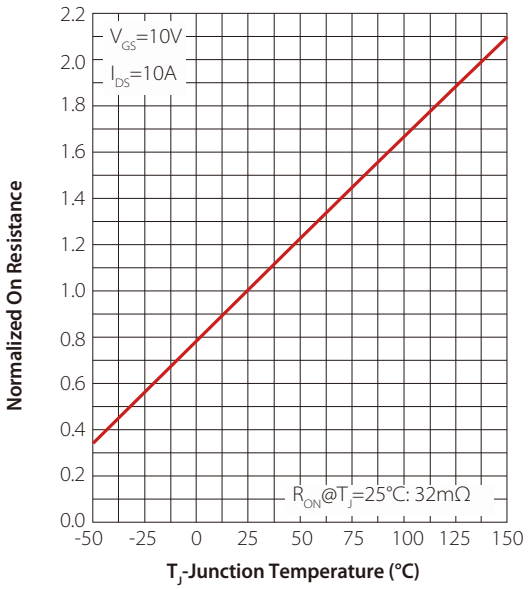


Figure 10: Diode Forward Current

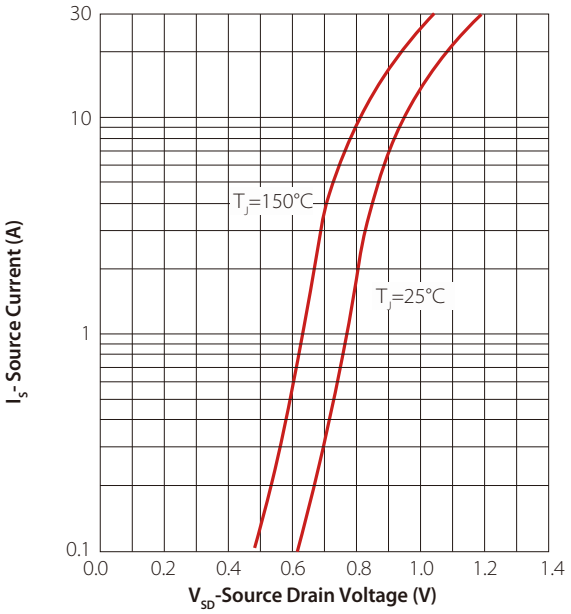


Figure 11:Capacitance

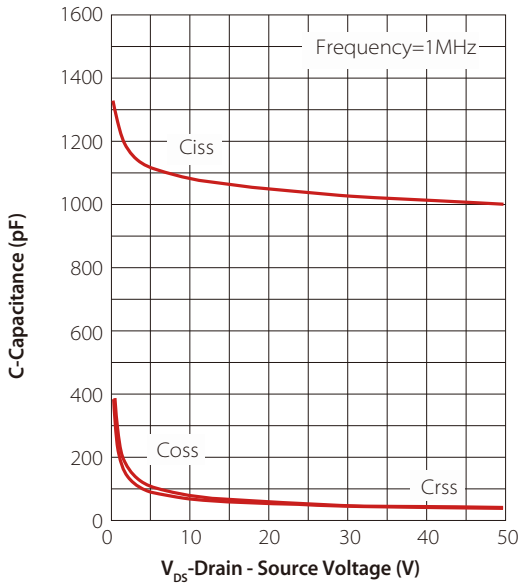
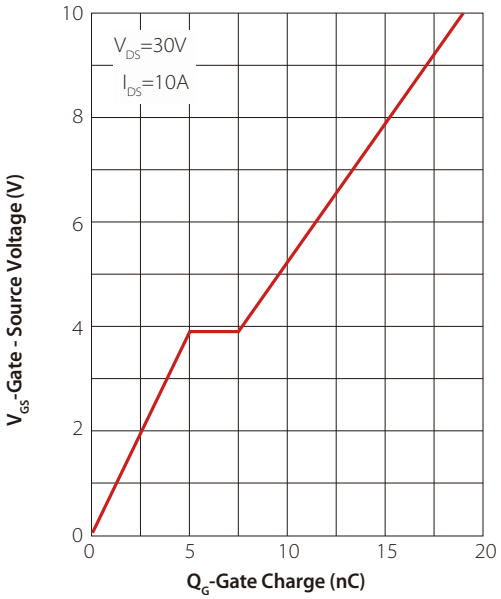


Figure 12: Gate Charge



P-Channel

Figure13: Power Capability

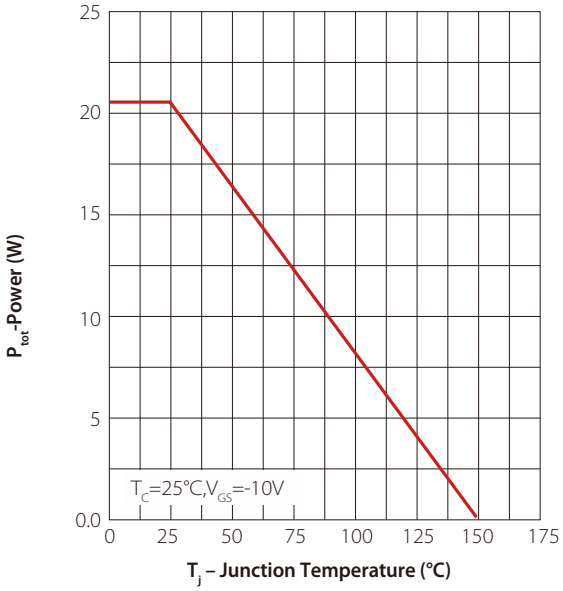


Figure14: Current Capability

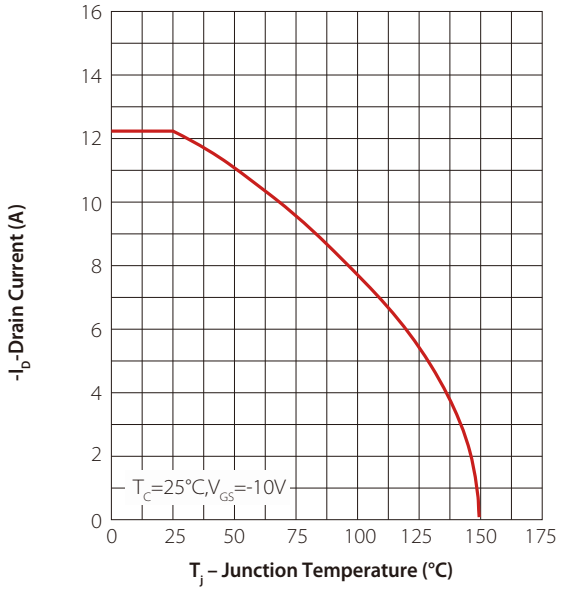


Figure15: Safe Operation Area

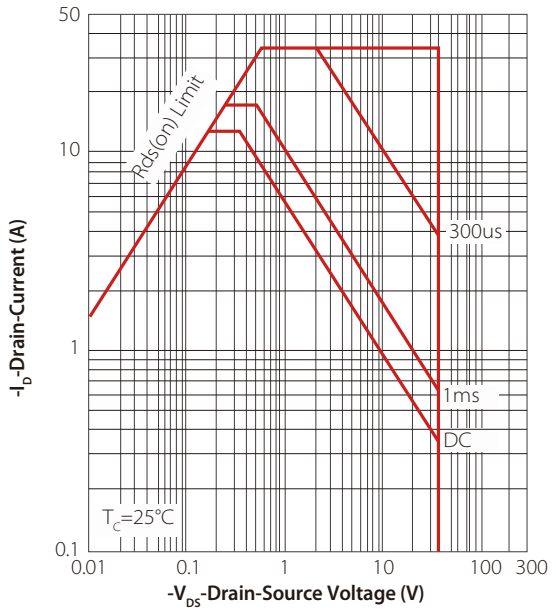


Figure 16: Transient Thermal Impedance

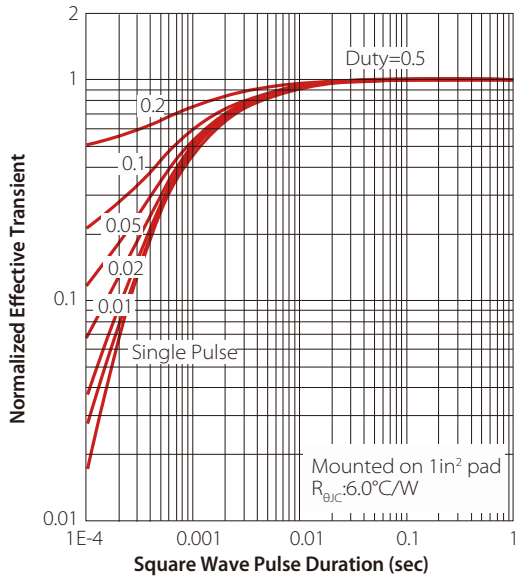


Figure 17:Output Characteristics

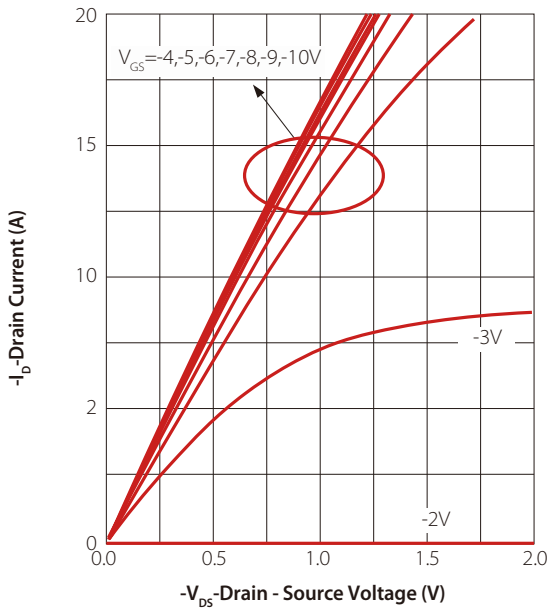


Figure 18: Drain-Source On Resistance

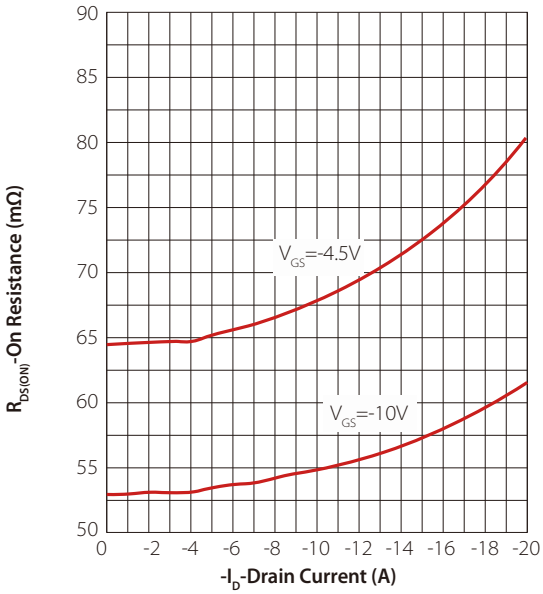


Figure 19:Transfer Characteristics

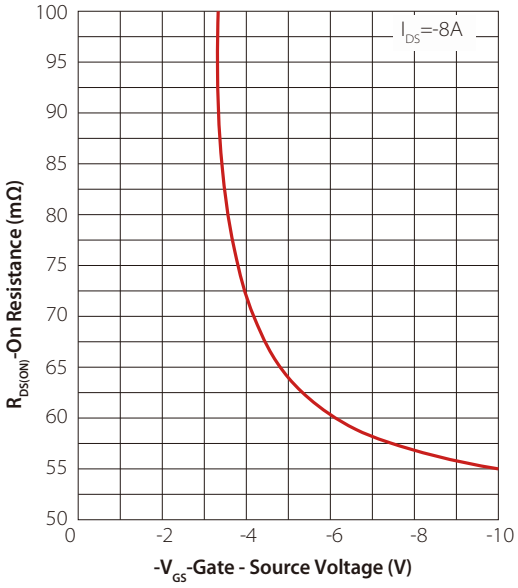


Figure 20: Normalized Threshold Voltage

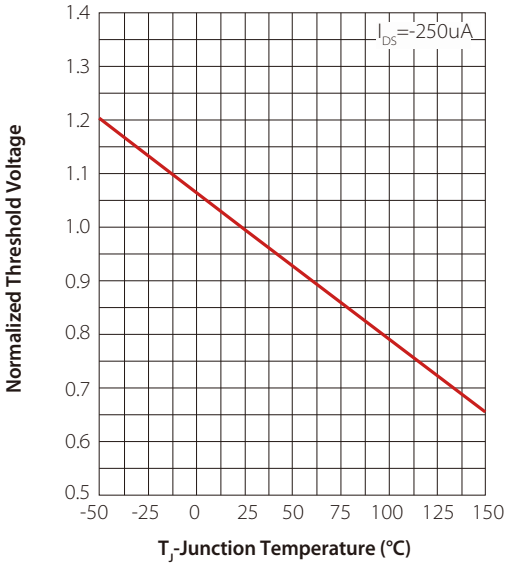


Figure 21:Normalized On Resistance

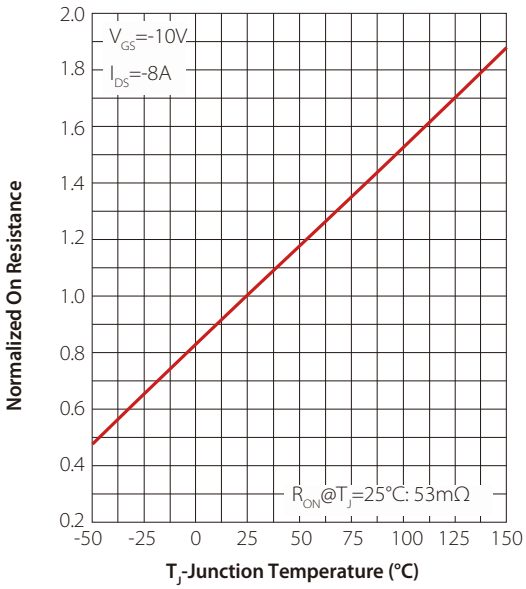


Figure 22: Diode Forward Current

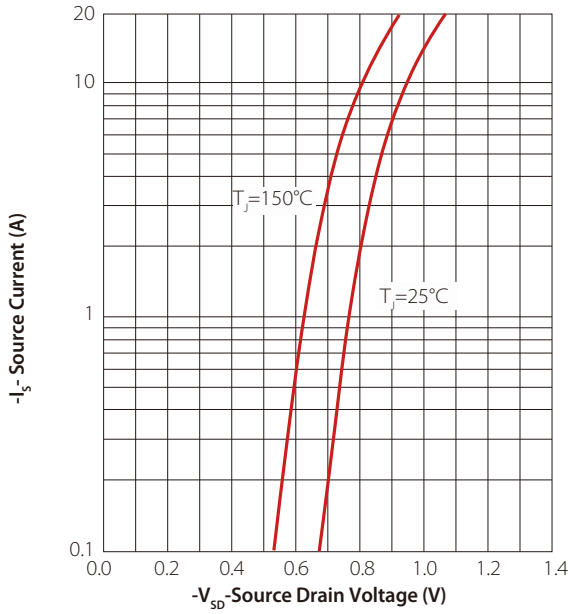


Figure 23:Capacitance

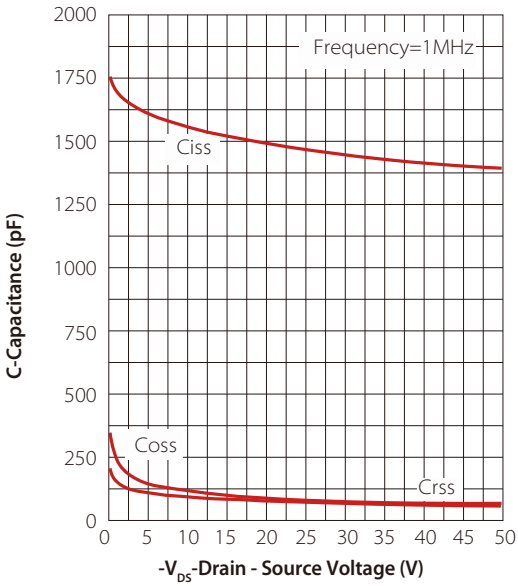
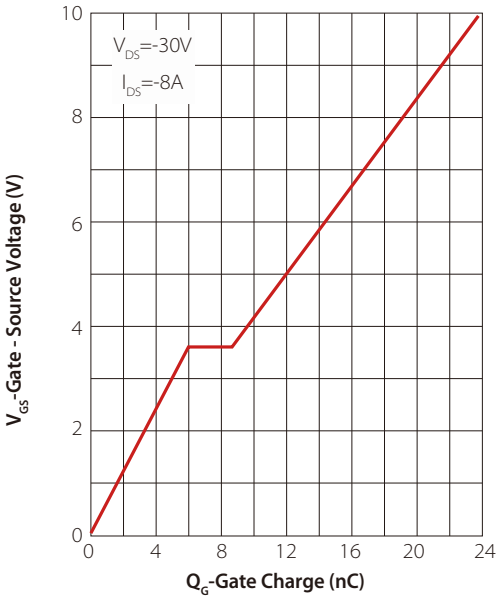
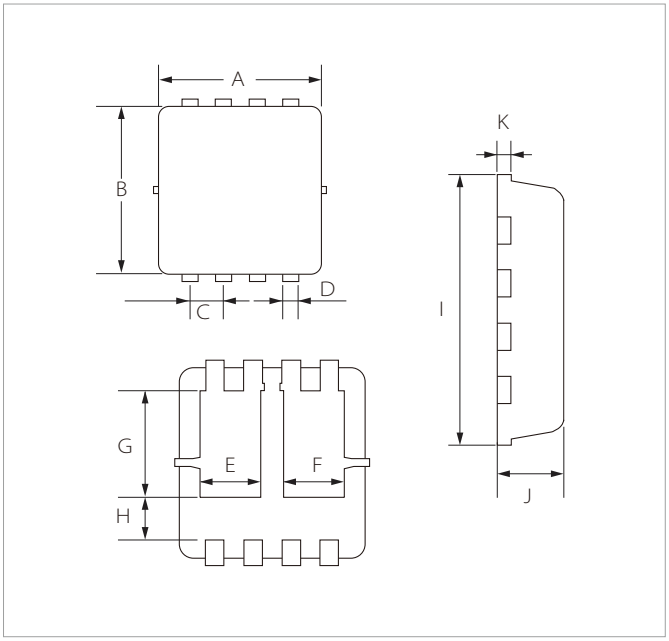


Figure 24: Gate Charge



PDFN3.3x3.3-8L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.05	3.25	0.120	0.128
B	3.15	3.55	0.124	0.140
C	0.65		0.026	
D	0.32		0.013	
E	0.835	1.235	0.033	0.049
F	0.835	1.235	0.033	0.049
G	1.53	1.93	0.060	0.076
H	0.49	0.89	0.020	0.035
I	3.10	3.50	0.122	0.138
J	0.675	0.875	0.027	0.034
K	0.152		0.006	

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNPMN66Y06QY	PDFN3.3×3.3-8L	5000PCS	13"

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