MOSFET

180A,60V,2.8mΩ,N-CHANNEL MOSFET

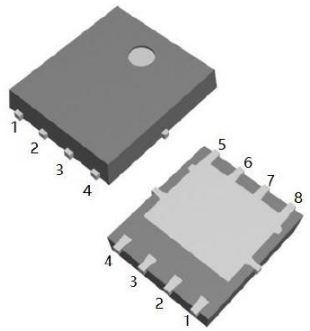
Features

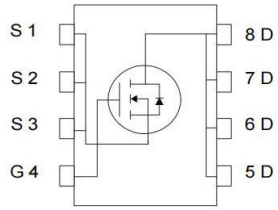
- Extremely low on-resistance $R_{DS(on)}$
- Excellent Low Ciss

Applications

- Synchronous Rectification for AC/DC Quick Charger
- Battery management
- UPS(Uninterrupible Power Supplies)

View and Internal Schematic Diagram





Parameter	Values	Unit
BV_{DSS}	60	V
I_D	180	A
R_{Dson}(max)	2.8	mΩ
$V_{GS(th)}$(Typ)	1.8	V

Ordering Code	Marking	Package	Packaging
X2P8N060GLV8	X2P8N060GLV8	PDFN5*6	Tape and Reel

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

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Drain-Source Voltage	V_{DSS}	-	-	60	V	-
Gate-Source Voltage	V_{GS}	-20	-	20	V	-
Continuous Drain Current(Note 1)	I_D	-	-	180	A	T_C=25℃
		-	-	114	A	T_C=100℃
Pulsed Drain Current(Note 2)	I_{DM}	-	-	720	A	-
Single Pulse Avalanche Energy	E_{AS}	-	-	127	mJ	L=0.5mH,V_{DS}=48V
Maximum Power Dissipation	P_D	-	-	125	W	T_C=25℃
		-	-	1.4	W	T_A=25℃
Operating Junction and Storage Temperature Range	T_j,T_{STG}	-55	-	150	℃	-

Thermal Characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Thermal resistance , Junction to Case	$R_{th(J-c)}$	-	-	1	℃/W	-
Thermal resistance , Junction to Ambient	$R_{th(J-a)}$	-	-	92	℃/W	

Electrical Characteristics (T_j=25℃,unless otherwise noted)

Static characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	V_{GS}=0V,I_D=250μA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=60V,V_{GS}=0V
Gate-Body Leakage Current,Forward	I_{GSSF}	-	-	100	nA	V_{GS}=20V,V_{DS}=0V
Gate-Body Leakage Current,Reverse	I_{GSSR}	-	-	-100	nA	V_{GS}=-20V,V_{DS}=0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS},I_D=250μA
Drain-Source On-State Resistance	$R_{DS(on)}$	-	2.3	2.8	mΩ	V_{GS}=10V,I_D=20A
		-	3.1	4	mΩ	V_{GS}=4.5V,I_D=20A
Gate Resistance	R_g	-	2	-	Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz
Forward Transconductance	g_{fs}	-	55	-	S	V_{DS}=5V,I_D=20A

Dynamic characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Input Capacitance	C_{iss}	-	3942	-	pF	V_{DS}=30V,V_{GS}=0V,f=1MHZ
Output Capacitance	C_{oss}	-	3105	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	344	-	pF	
Turn-On Delay Time	$t_{d(on)}$	-	18	-	ns	V_{DD}=30V,R_G=10Ω,R_{G_ext}=10V,I_D=30A
Turn-On Rise Time	t_r	-	4	-	ns	
Turn-Off Delay Time	$t_{d(off)}$	-	90	-	ns	
Turn-Off Fall Time	t_f	-	127	-	ns	

Gate charge characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Total Gate Charge	Q_g	-	73	-	nC	V_{DS}=30V,I_D=20A,V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	14	-	nC	
Gate-Drain Charge	Q_{gd}	-	15	-	nC	

Reverse diode

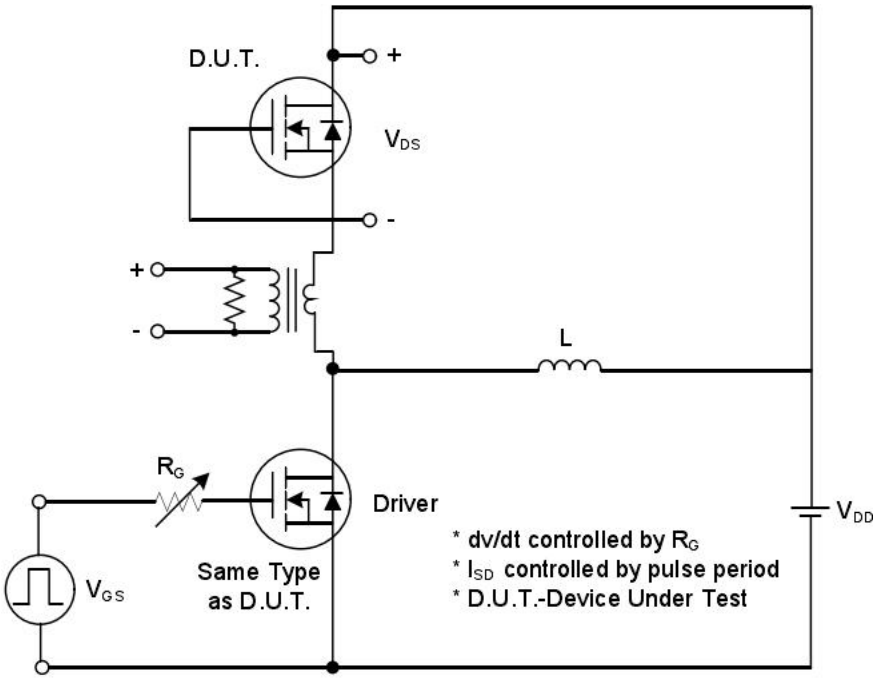
Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Continuous Diode Forward Current	I_S	-	-	180	A	
Pulsed Diode Forward Current	I_{SM}	-	-	720	A	
Diode Forward Voltage	V_{SD}	-	-	1.2	V	I_S=20A,V_{GS}=0V
Reverse Recovery Time	t_{rr}	-	96	-	ns	V_{GS}=0V,I_S=30A,di/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	242	-	nC	

Notes

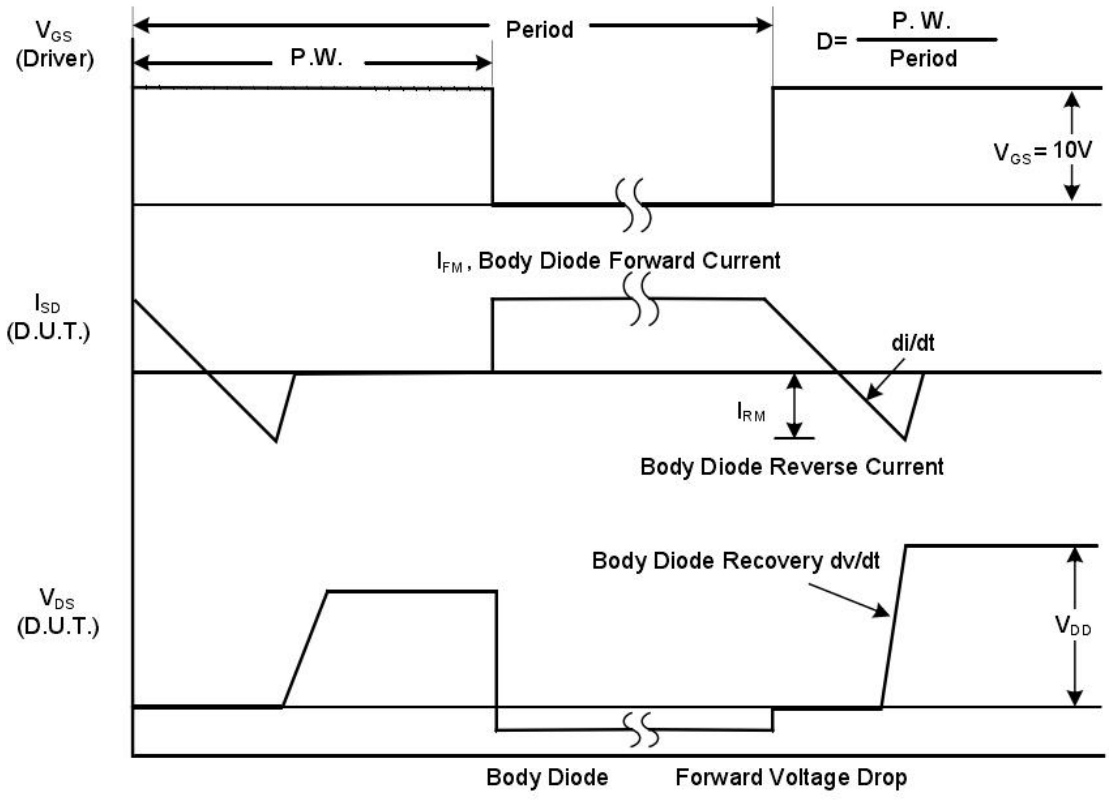
1. Computed continuous current assumes the condition of T_{j_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.

2.This single-pulse measurement was taken under T_{j_Max} = 150°C.

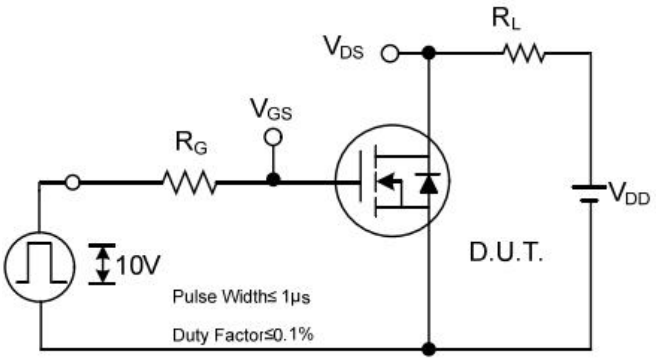
RATING AND CHARACTERISTIC CURVES



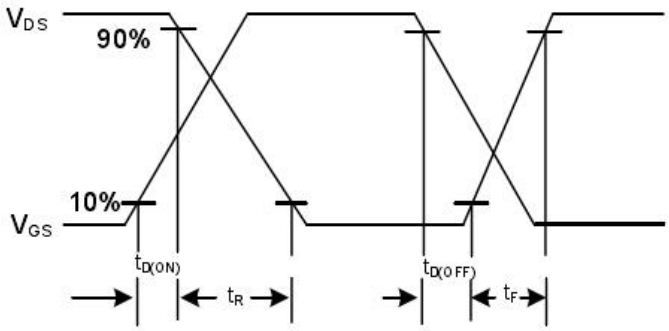
Peak Diode Recovery dv/dt Test Circuit



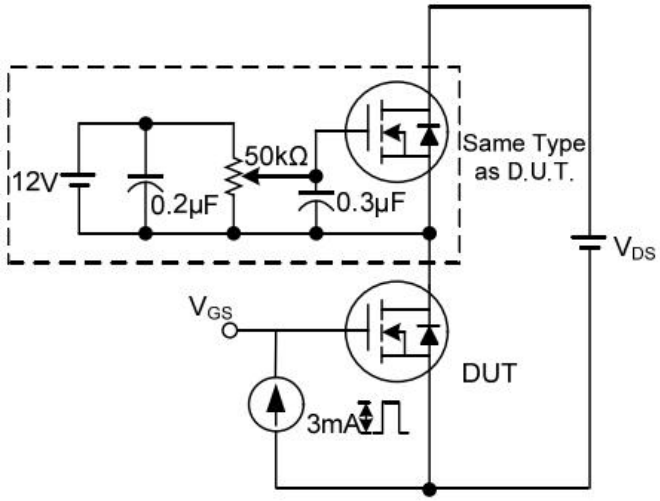
Peak Diode Recovery dv/dt Waveforms



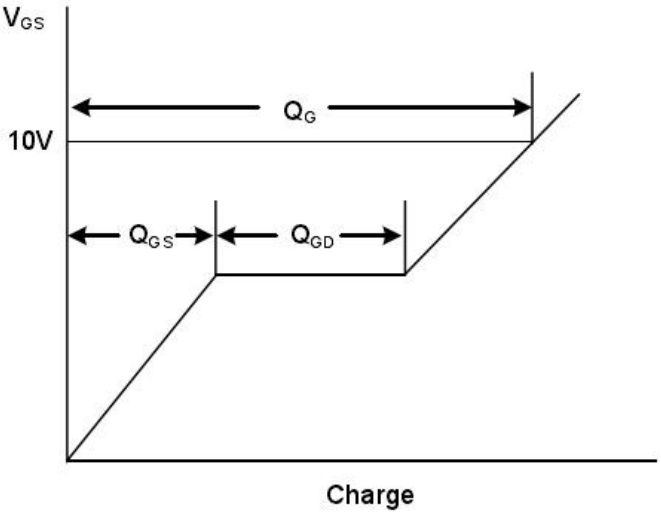
Switching Test Circuit



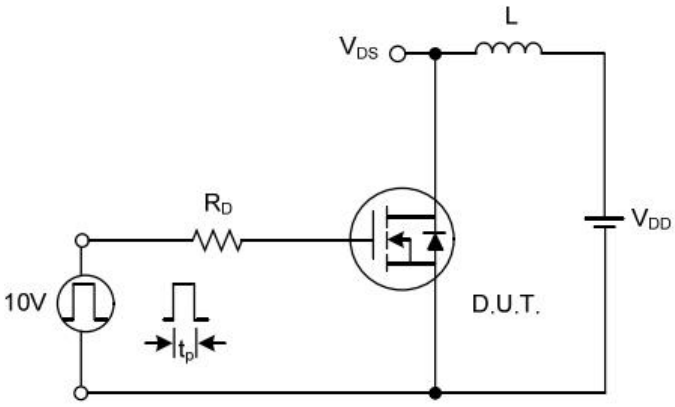
Switching Waveforms



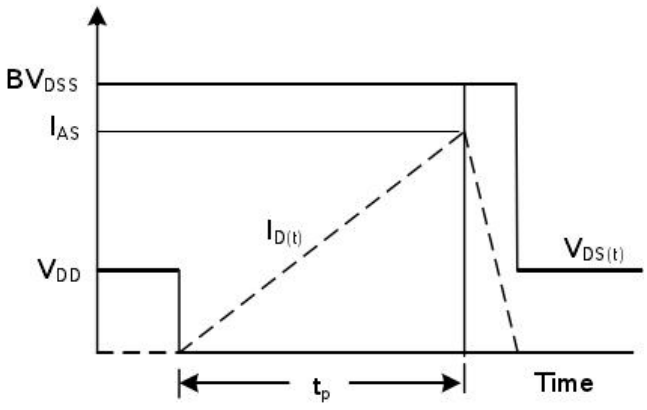
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

RATING AND CHARACTERISTIC CURVES

Figure.1 Output Characteristics

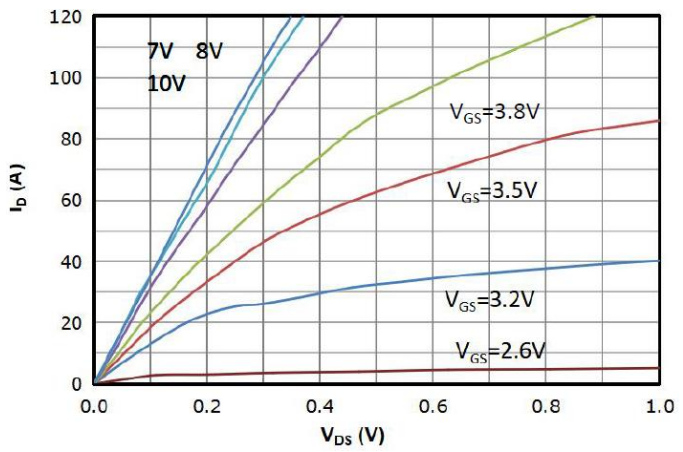


Figure.2 Transfer Characteristics

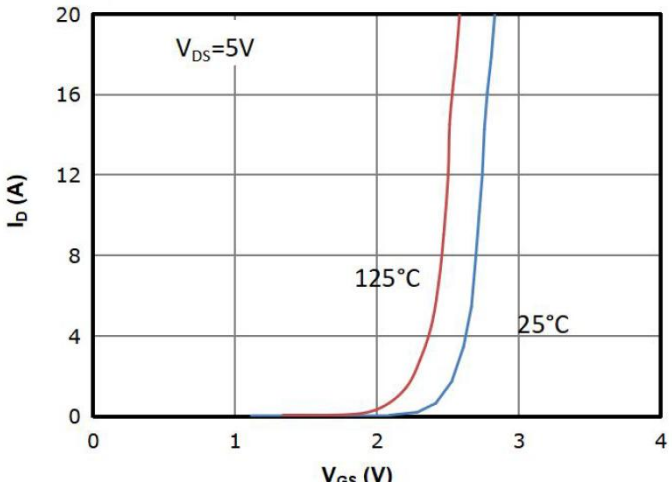


Figure.3 Rds(on) vsDrain Current and Gate Voltage

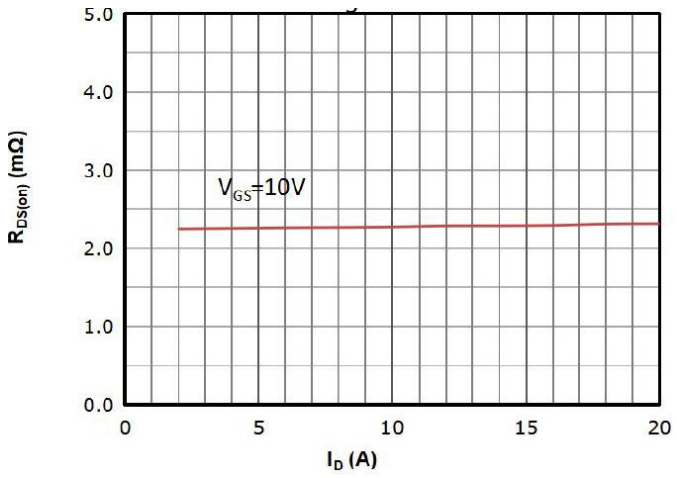


Figure.4 Rds(on)vs Gate Voltage

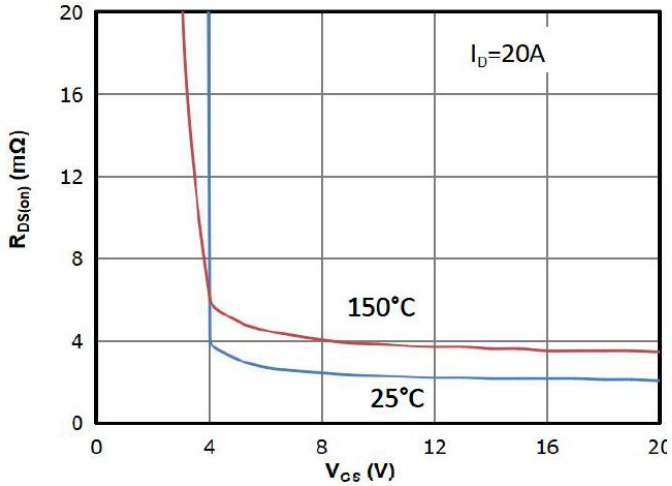


Figure.5 Rds(on) vs. Temperature

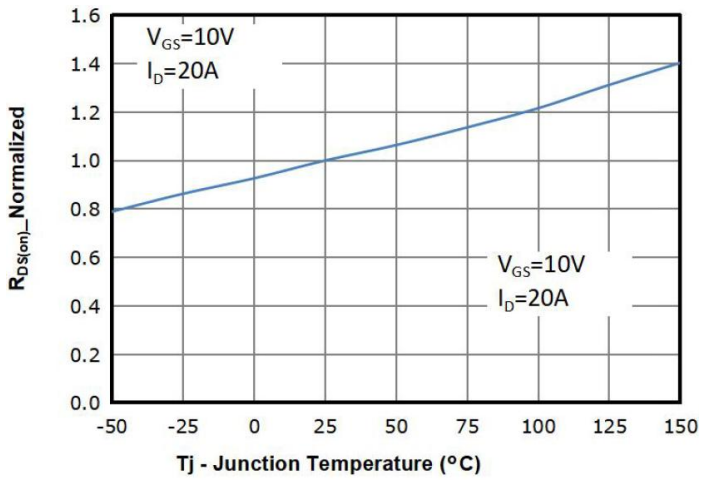


Figure.6 Vgs(th) vs. Temperature

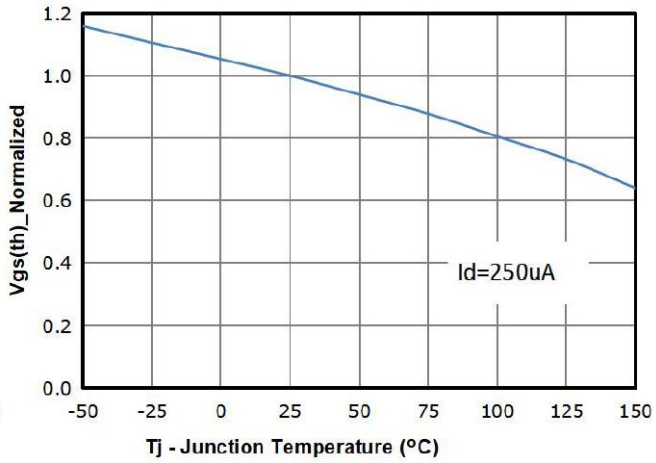


Figure.7 BVdss vs. Temperature

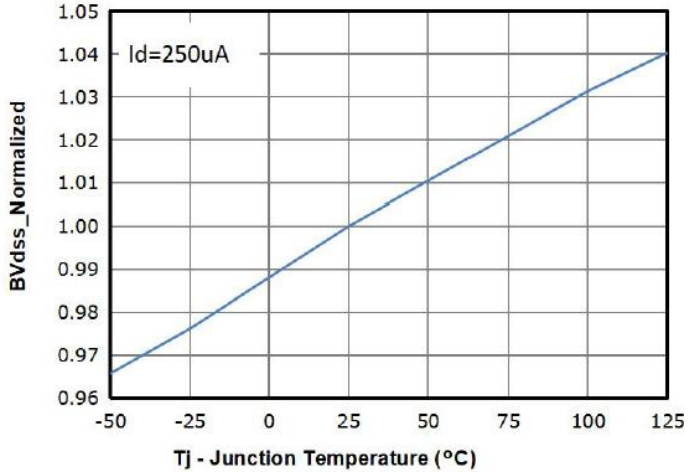


Figure.8 Capacitance Characteristics

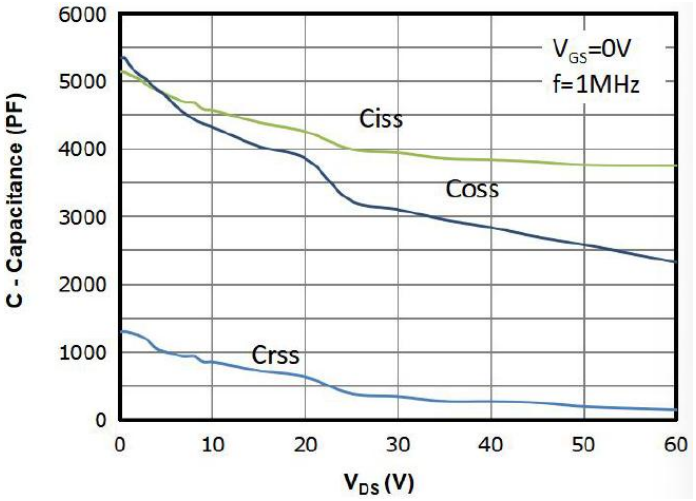


Figure.9 Gate Charge Characteristics

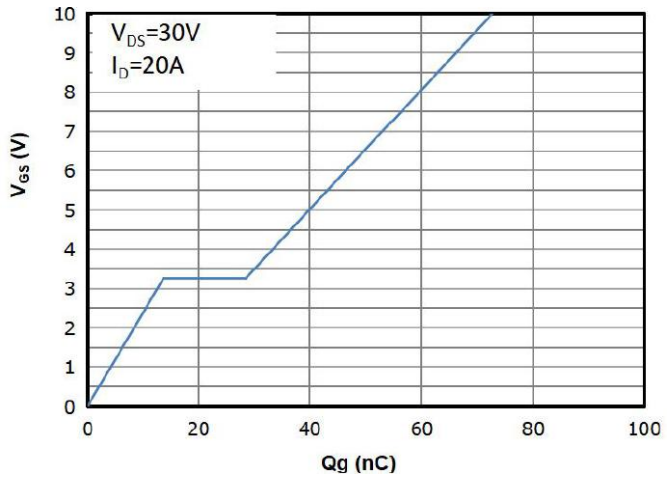


Figure.10 Body-diode Forward Characteristics

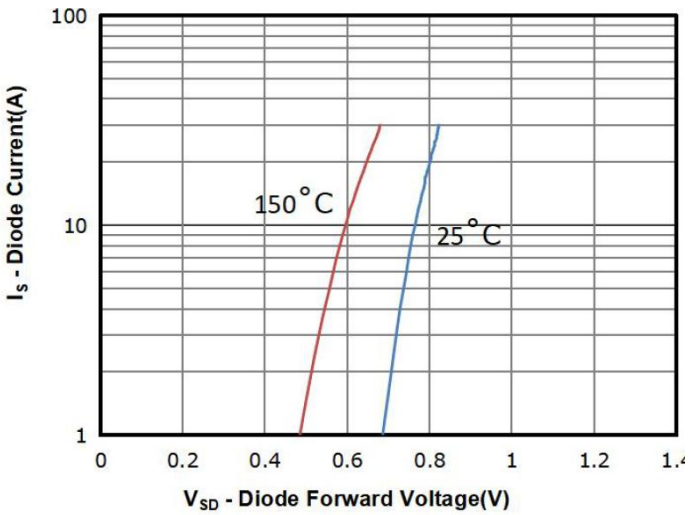


Figure.11 Power Disspation

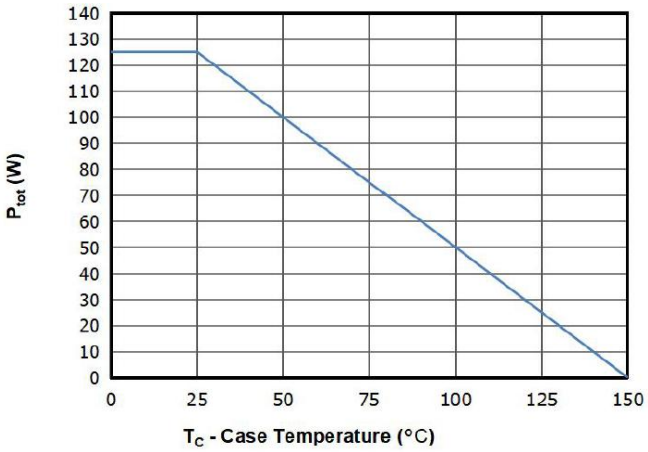


Figure.12 Drain Current Derating

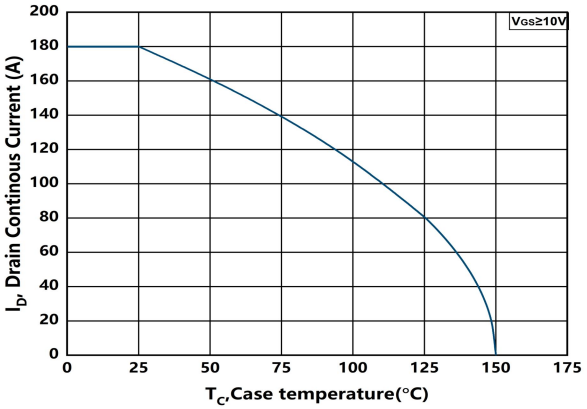


Figure.13 Safe Operating Area

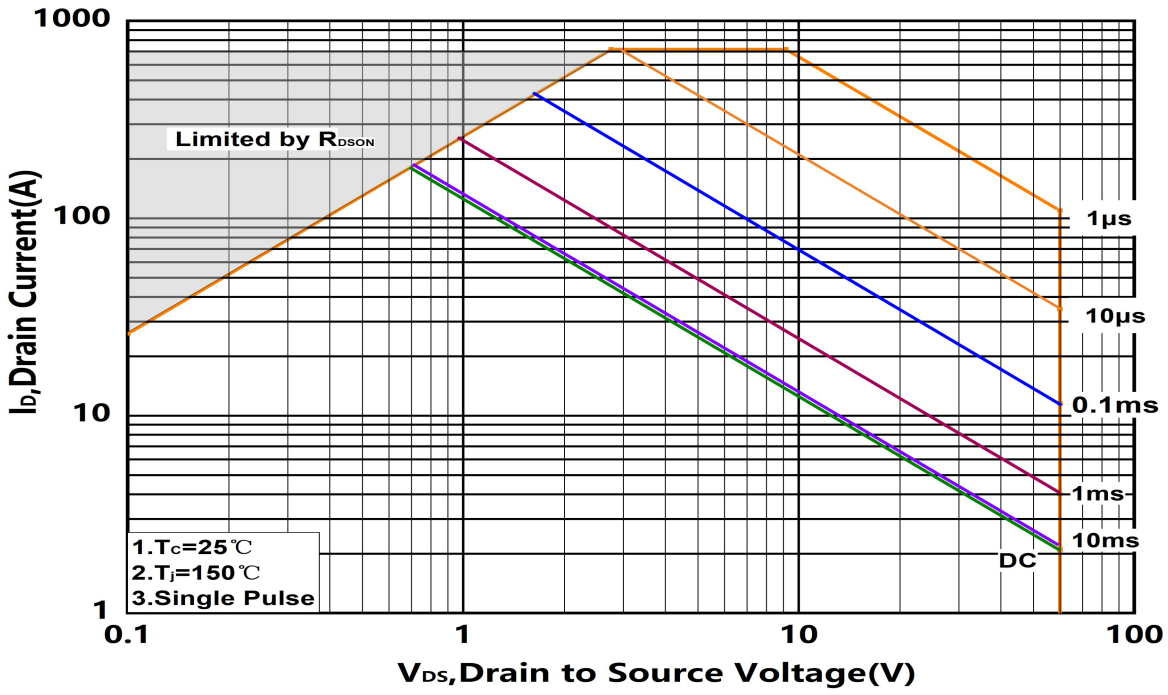
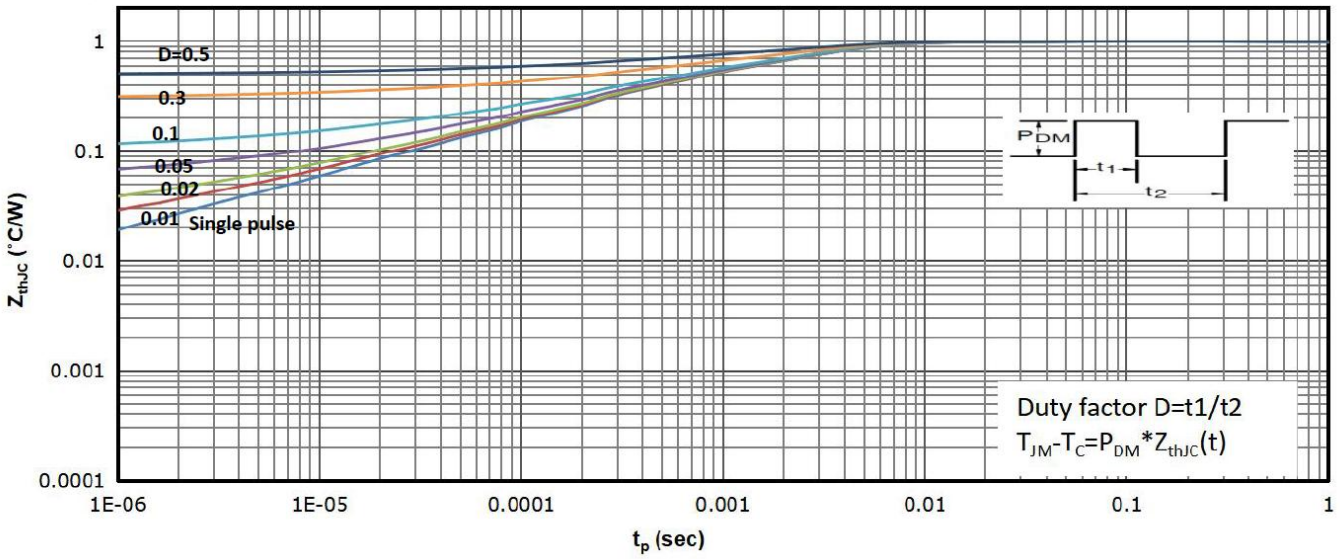
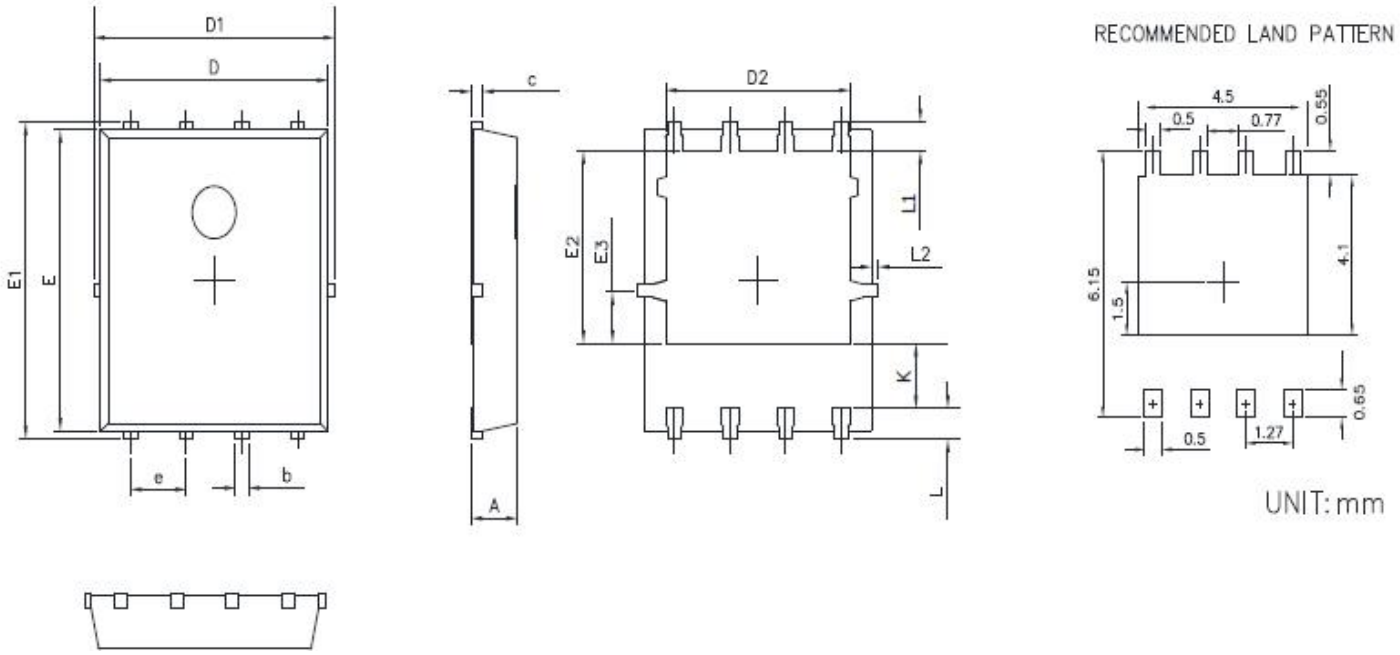


Figure.14 Maximum Effective Thermal Impedance , Junction to Case



Package Outline: PDFN5*6-8L



SYMOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.10	0.035	0.043
b	0.25	0.50	0.010	0.020
c	0.10	0.30	0.004	0.012
D	4.80	5.30	0.189	0.209
D1	4.90	5.50	0.193	0.217
D2	3.92	4.20	0.154	0.165
E	5.65	5.85	0.222	0.230
E1	5.90	6.20	0.232	0.244
E2	3.33	3.78	0.131	0.149
E3	0.80	1.00	0.031	0.039
e	1.27		0.050	
L	0.40	0.70	0.016	0.028
L1	0.65		0.026	
L2	0.00	0.15	0.000	0.006
K	1.00	1.50	0.039	0.059