

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
60V	10mΩ@10V	35A
	13mΩ@4.5V	



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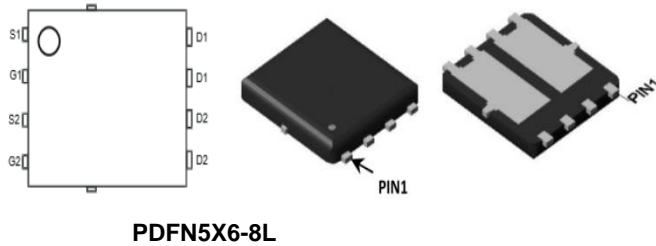
## Feature

- Fast switching speed
- Surface mount package
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

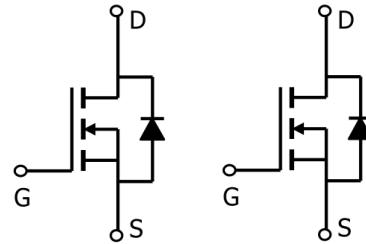
## Applications

- DC-DC Converters.
- Motor Control.

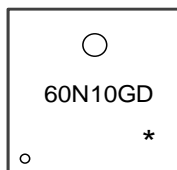
## Package



## Circuit diagram



## Marking



60N10GD =Device Code  
\* =Month Code

## Order Information

Device	Package	Unite/Tube
SP60N10GDNK	PDFN5 × 6-8L	5000

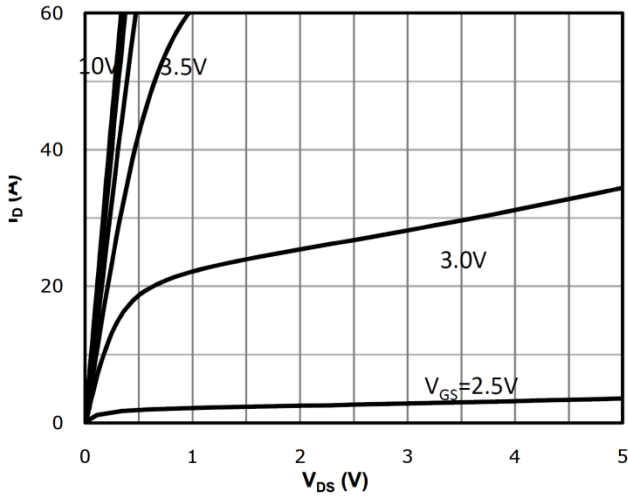
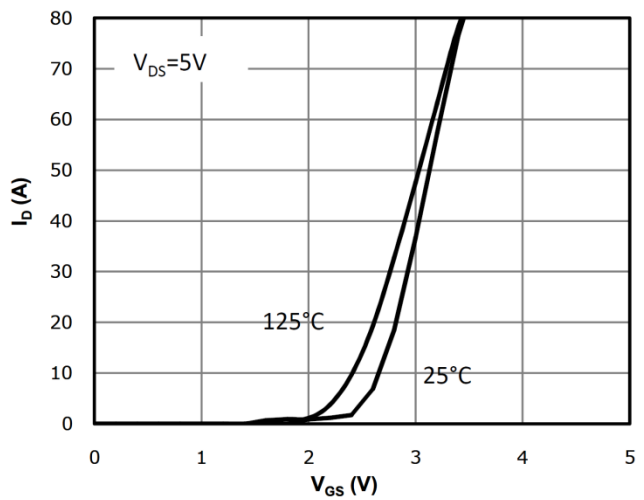
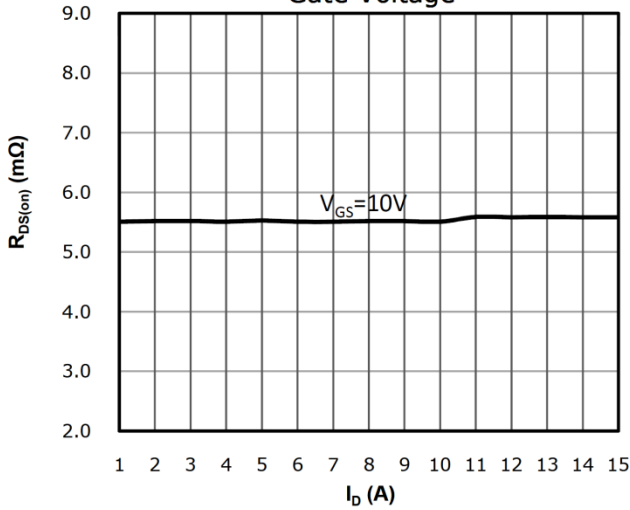
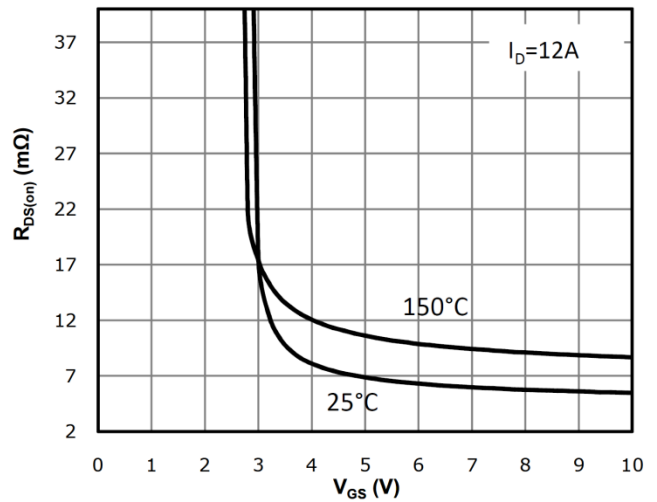
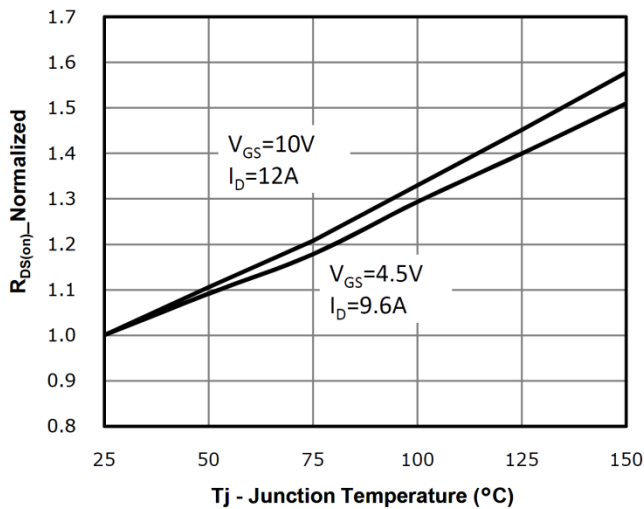
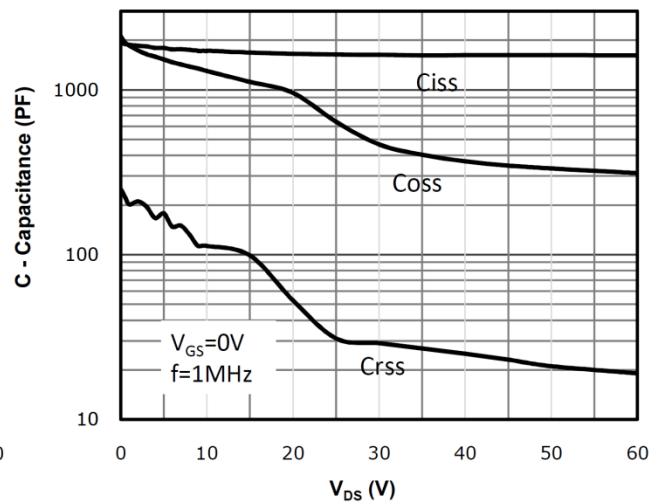
**Absolute maximum ratings (Ta=25°C unless otherwise noted)**

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DSS</sub>	60	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current(Tc=25°C)	I <sub>D</sub>	35	A
Pulse Drain Current Tested	I <sub>DM</sub>	140	A
Maximum Power Dissipation(Tc=25°C)	P <sub>D</sub>	79	W
Thermal Resistance-Junction to Case	R <sub>θJC</sub>	1.58	°C/W
Maximum Junction Temperature	T <sub>J</sub>	-55 to 150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C

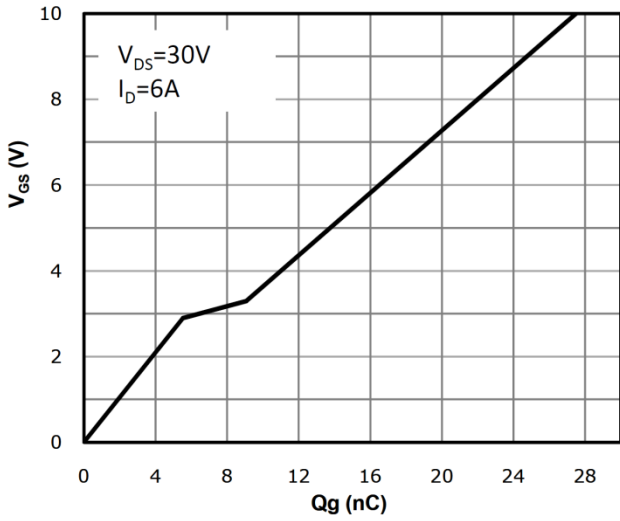
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Electrical Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	VGS=0V, ID=250mA	60	-	-	V
Zero Gate Voltage Drain Current	IDSS	VDS=60V, VGS=0V	-	-	1	uA
Gate Leakage Current	IGSS	VGS=±20V, VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS, ID=250uA	1.0	1.6	2.5	V
Drain-Source On-state Resistance	R <sub>DS(ON)</sub>	VGS=10V, ID=15A	-	10	13	mΩ
		VGS=4.5V, ID=10A	-	13	18	
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	VGS=0V, VDS=30V, F=1MHz	-	1402	-	pF
Output Capacitance	C <sub>oss</sub>		-	463	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	31	-	
Turn-on Delay Time	t <sub>d(ON)</sub>	VDD=30V, ID=10A, VGS=10V, RG=2.7Ω	-	11	-	nS
Turn-on Rise Time	t <sub>r</sub>		-	20	-	
Turn-off Delay Time	t <sub>d(OFF)</sub>		-	29	-	
Turn-off Fall Time	t <sub>f</sub>		-	30	-	
Total Gate Charge	Q <sub>g</sub>	VDS=30V, VGS=10V, ID=10A	-	26	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	6.4	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	3.3	-	
<b>Source-Drain Characteristics</b>						
Diode Forward Voltage	V <sub>SD</sub>	IS=1A, VGS=0V	-	-	1.2	V

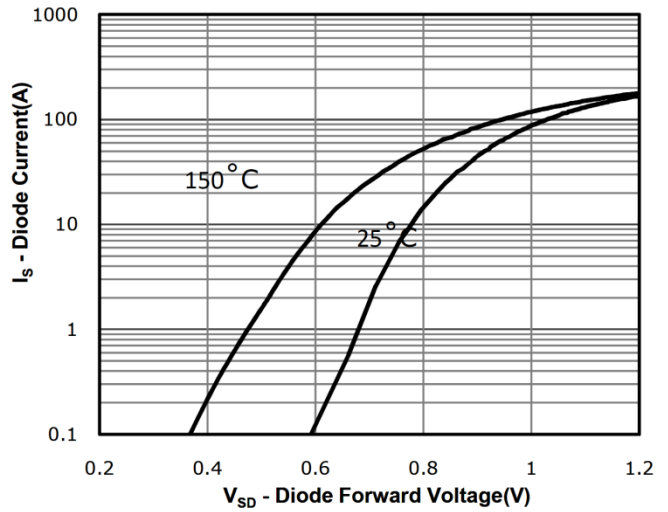
### Typical Characteristics

**Output Characteristics**

**Transfer Characteristics**

**Rds(on) vs Drain Current and Gate Voltage**

**Rds(on) vs Gate Voltage**

**Rds(on) vs. Temperature**

**Capacitance Characteristics**


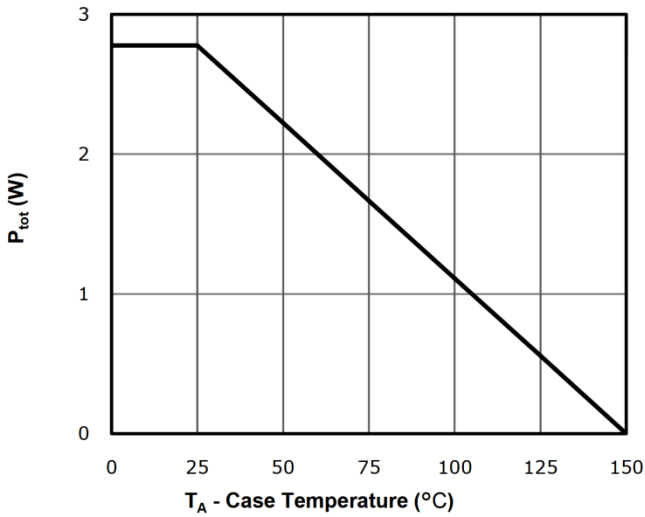
Gate Charge Characteristics



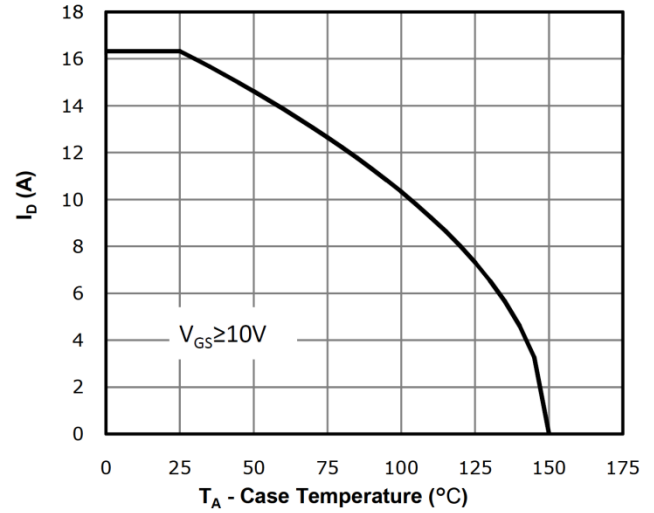
Body-diode Forward Characteristics



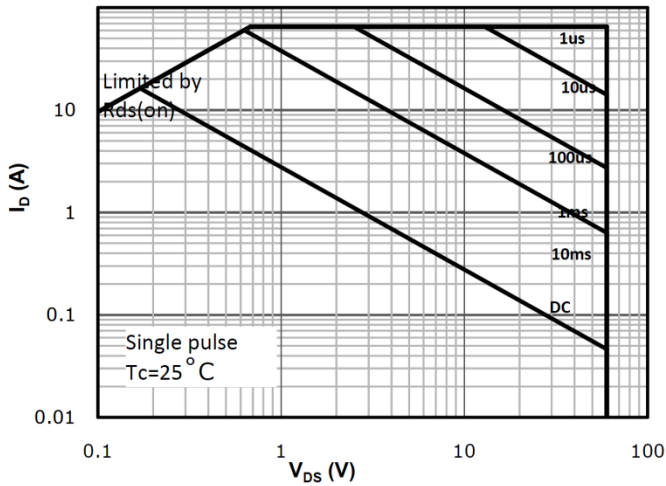
Power Dissipation



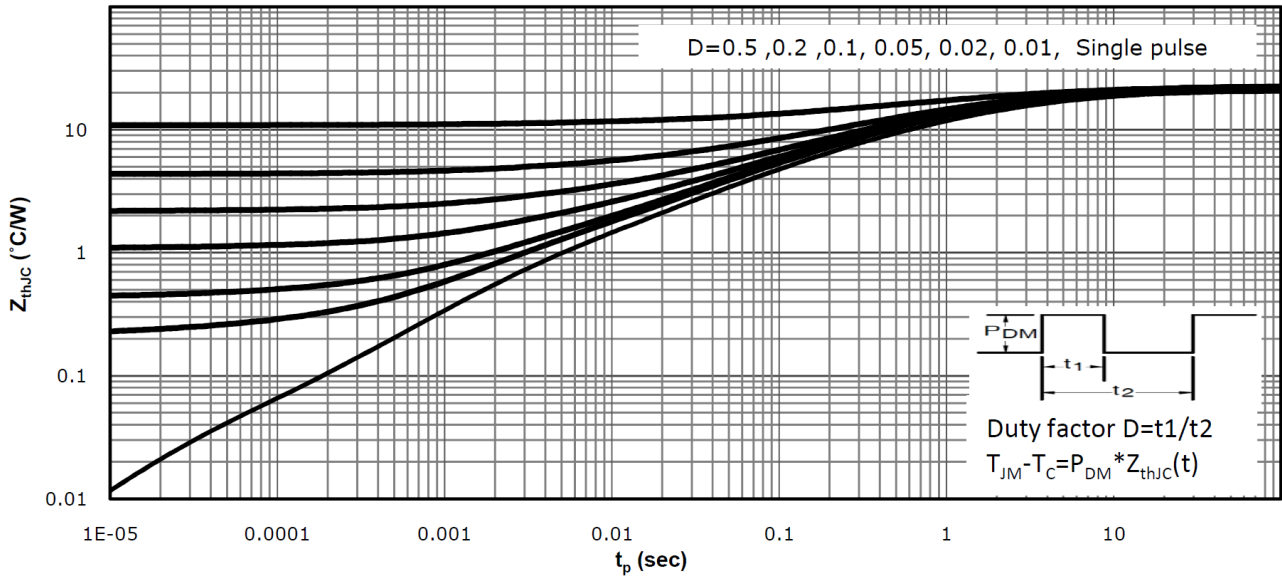
Drain Current Derating



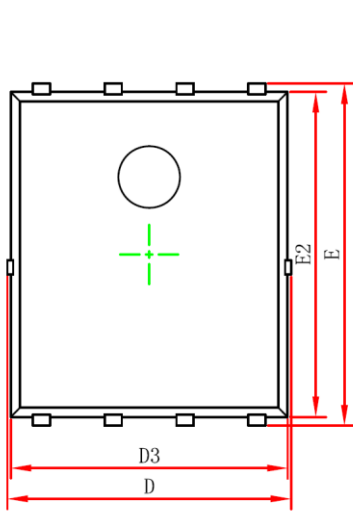
Safe Operating Area



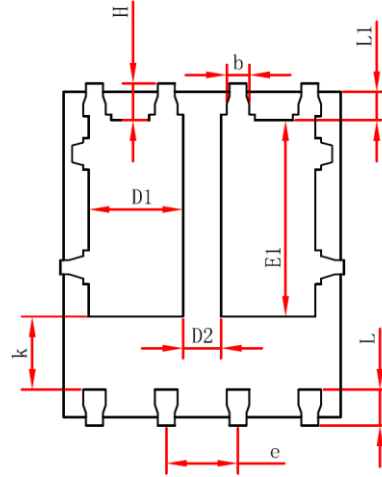
Max. Transient Thermal Impedance



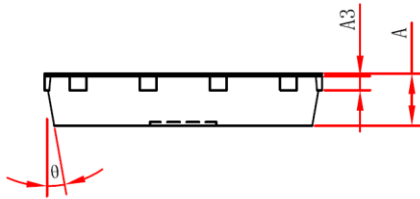
**PDFN5x6-8L Package Information**



Top View  
[顶视图]



Bottom View  
[背视图]



Side View  
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254 REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	1.470	1.870	0.058	0.074
D2	0.470	0.870	0.019	0.034
E1	3.375	3.575	0.133	0.141
D3	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

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