

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
30V	2.2m $\Omega$ @10V	105A
	3.6m $\Omega$ @4.5V	

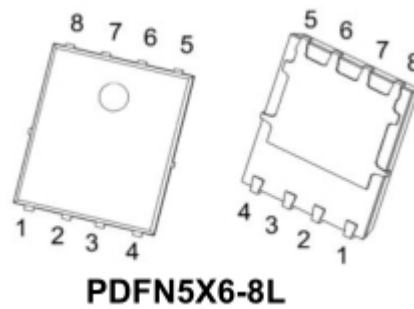
## Feature

- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate Charge

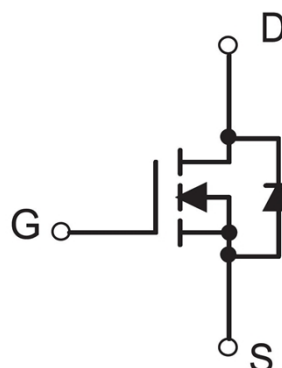
## Application

- Load Switch
- PWM Application

## Package



## Circuit diagram



## Marking



30N02B : Product code  
\* :Month code.

## Absolute maximum ratings

(T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (T <sub>C</sub> = 25°C)	I <sub>D</sub>	105	A
Pulsed Drain Current note <sup>1</sup>	I <sub>DM</sub>	420	A
Single Pulsed Avalanche Energy note <sup>2</sup>	E <sub>AS</sub>	350	mJ
Power Dissipation (T <sub>C</sub> = 25°C)	P <sub>D</sub>	105	W
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	1.19	°C/W
Operating and Storage Temperature Range	T <sub>STG</sub> , T <sub>J</sub>	-55 to 150	°C

## Electrical characteristics

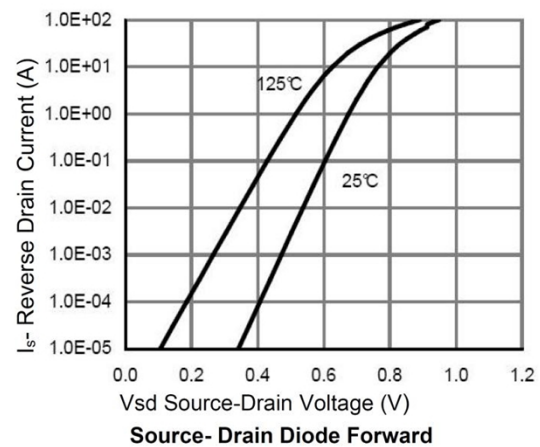
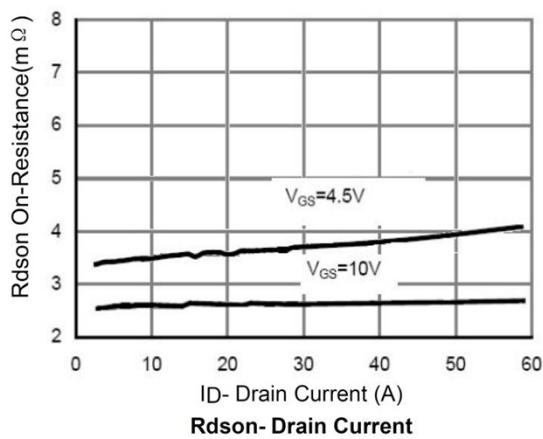
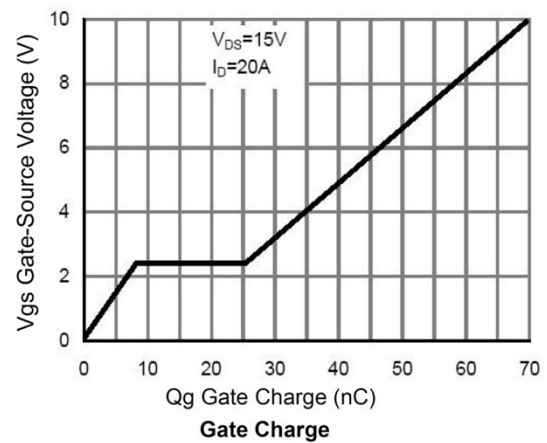
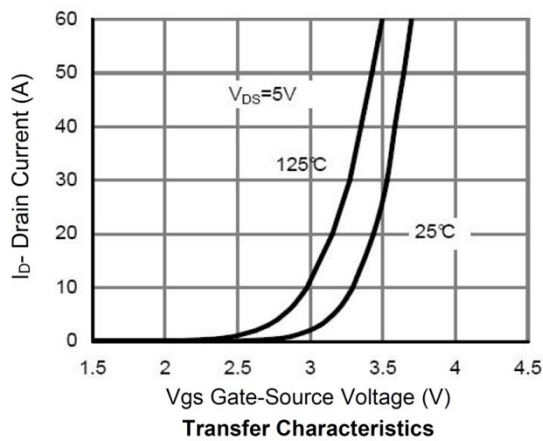
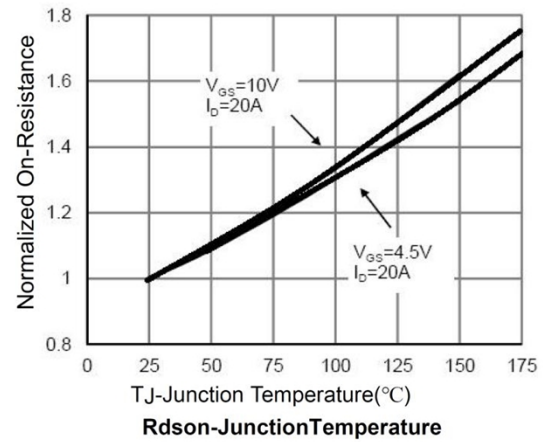
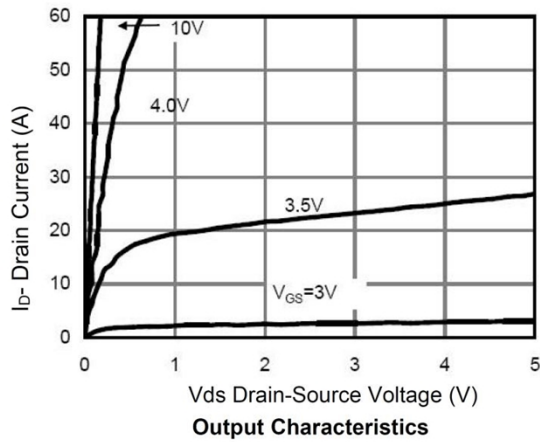
( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

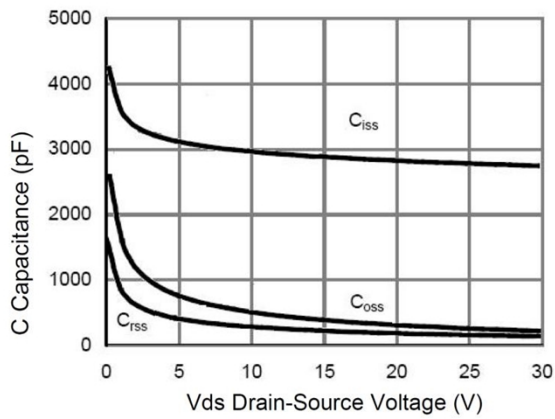
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	$\mu A$
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.7	2.5	V
Static Drain-Source on-Resistance note3	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$		2.2	2.8	m $\Omega$
		$V_{GS} = 4.5V, I_D = 20A$		3.6	4.8	
Dynamic Characteristics						
Input Capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		3100		pF
Output Capacitance	$C_{oss}$			456		
Reverse Transfer Capacitance	$C_{rss}$			388		
Total Gate Charge	$Q_g$	$V_{DS} = 15V, I_D = 30A, V_{GS} = 10V$		75		pF
Gate-Source Charge	$Q_{gs}$			12		
Gate-Drain Charge	$Q_{gd}$			18.3		
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	$V_{DD} = 15V, I_D = 60A, R_{GEN} = 1.8\Omega, V_{GS} = 4.5V$		11		nS
Rise Time	$T_r$			120		
Turn-Off Delay Time	$T_{d(off)}$			25		
Fall Time	$T_f$			60		
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	$I_S$				130	A
Maximum Pulsed Drain to Source Diode Forward Current	$I_{SM}$				360	A
Drain to Source Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 20A$			1.2	V
Body Diode Reverse Recovery Time	$t_{rr}$	$I_F = 60A, di/dt = 100A/\mu s$		56		ns
Body Diode Reverse Recovery Time Charge	$Q_{rr}$			110		nC

### Note:

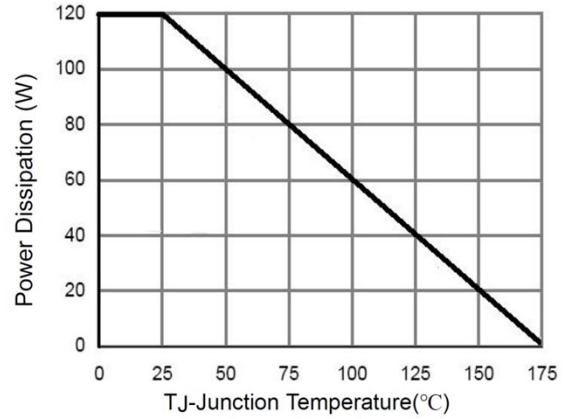
1.  $E_{AS}$  condition:  $T_j=25^{\circ}\text{C}$ ,  $V_G=10V, L=0.5mH, R_g=25\Omega$

## Typical Characteristics

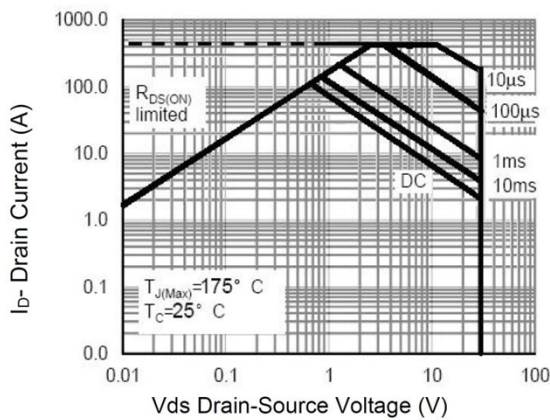




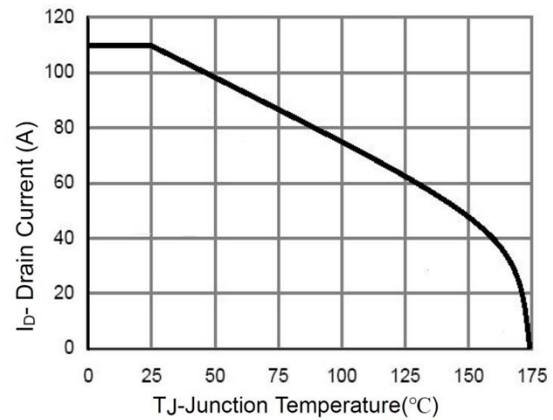
Capacitance vs  $V_{DS}$



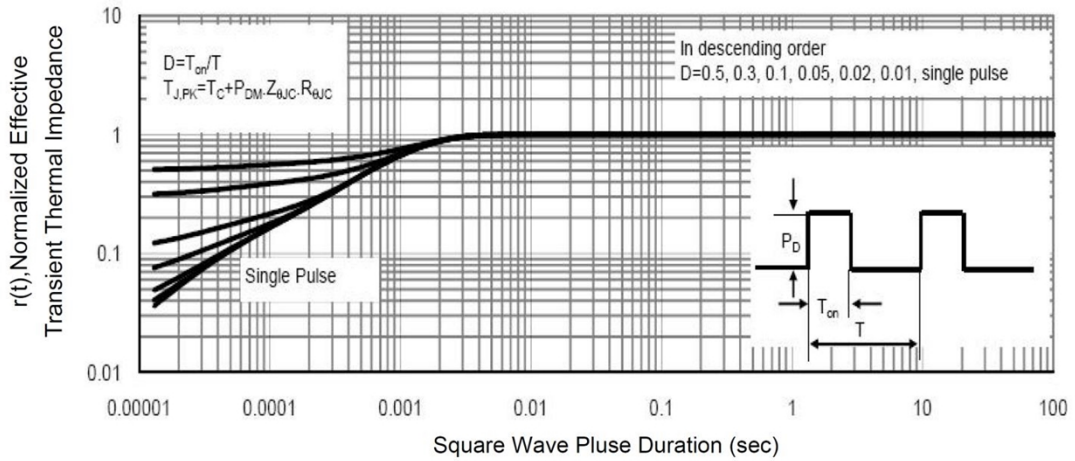
Power De-rating



Safe Operation Area

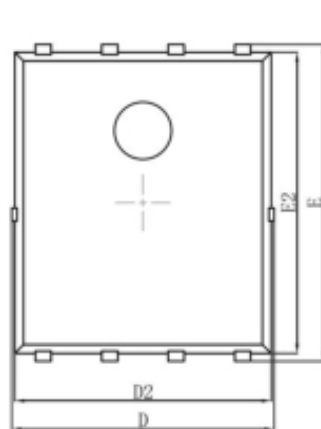


Current De-rating

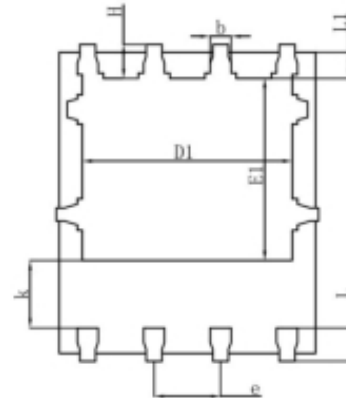


Normalized Maximum Transient Thermal Impedance

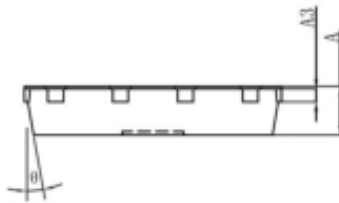
## PDFN5X6-8L Package Information



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	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	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°