

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
30V	7mΩ@10V	35A
	10.5mΩ@4.5V	

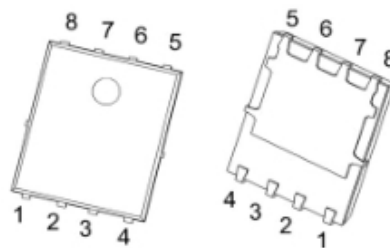
## Feature

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

## Application

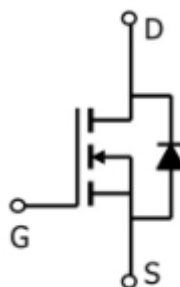
- PWM applications
- Load switch
- Power management

## Package

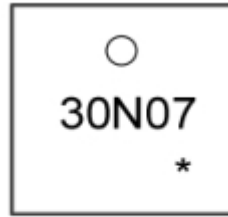


PDFNWB5X6-8L

## Circuit diagram



## Marking



30N07 : 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>GS</sub> =0V)	V <sub>DS</sub>	30	V
Gate-Source Voltage (V <sub>DS</sub> =0V)	V <sub>GS</sub>	±20	V
Drain Current-Continuous(T <sub>C</sub> =25°C) <sup>1</sup>	I <sub>D</sub>	35	A
Drain Current-Continuous@ Current-Pulsed <sup>2</sup>	I <sub>DM (pluse)</sub>	140	A
Maximum Power Dissipation(T <sub>C</sub> =25°C)	P <sub>D</sub>	45	W
Avalanche energy	E <sub>AS</sub>	90	mJ
Thermal Resistance,Junction-to-Case	R <sub>θJC</sub>	2.78	°C/W
Operating Junction and Storage Temperature Range	T <sub>STG</sub> , T <sub>J</sub>	-55~+175	°C

## Electrical characteristics

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

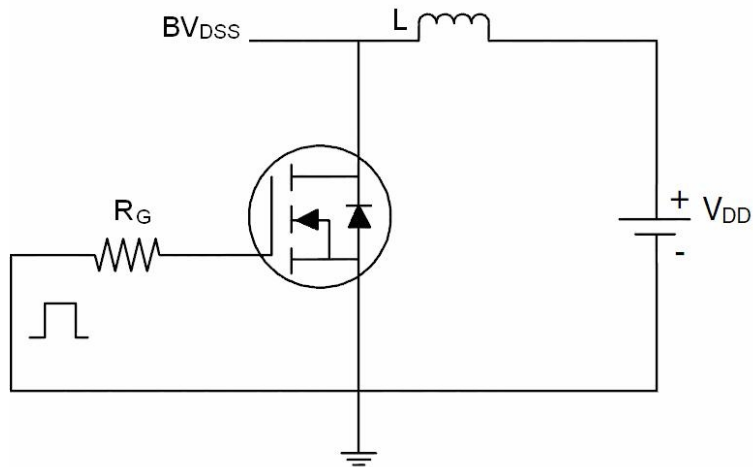
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$BV_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1	$\mu A$
Gate-Source Leakage	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	$\mu A$
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.5	2.5	V
Forward Transconductance	$g_{FS}$	$V_{DS} = 5V, I_D = 20A$	10	20		S
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		7	9	m $\Omega$
		$V_{GS} = 4.5V, I_D = 15A$		10.5	15	
Dynamic Characteristics						
Input Capacitance	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$		1050		pF
Output Capacitance	$C_{oss}$			145		
Reverse Transfer Capacitance	$C_{rss}$			120		
Gate resistance	$R_g$	$V_{GS} = 0V, V_{DS} = 0V, f = 1.0MHz$ Z		2		$\Omega$
Switching Times						
Turn-on Delay Time	$T_{d(on)}$	$V_{GS} = 15V, V_{DS} = 15V, R_L = 0.75W, R_{GEN} = 3W$		7		nS
Turn-on Rise Time	$T_r$			22		
Turn-off Delay Time	$T_{d(off)}$			30		
Turn-off Fall Time	$T_f$			5		
Total Gate Charge	$Q_g$	$V_{GS} = 10V, V_{DS} = 15V, I_D = 12A$		22		pF
Gate-Source Charge	$Q_{gs}$			4		
Gate-Drain Charge	$Q_{gd}$			7		
Source-Drain Diode Characteristics						
Gate-Drain Charge	$V_{SD}$	$V_{GS} = 0V, I_S = 20A$			1.2	V

### Notes:

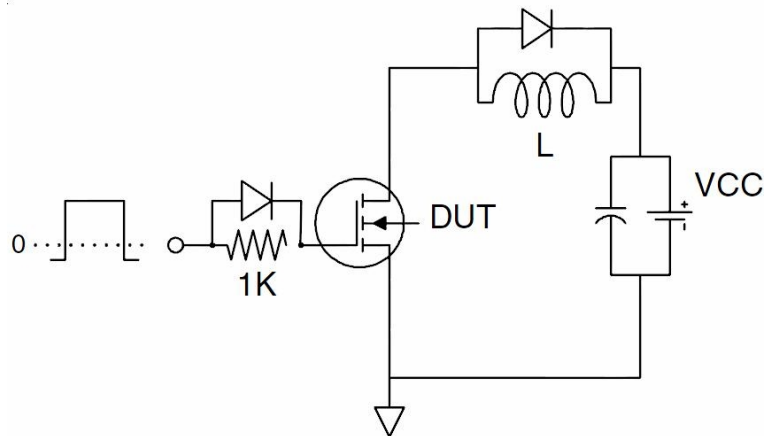
1. The maximum current rating is package limited
2. Repetitive Rating: Pulse width limited by maximum junction
3.  $E_{AS}$  condition:  $T_J = 25^{\circ}\text{C}, V_{DD} = 30V, V_g = 10V, R_g = 25\Omega$

## Test Circuit

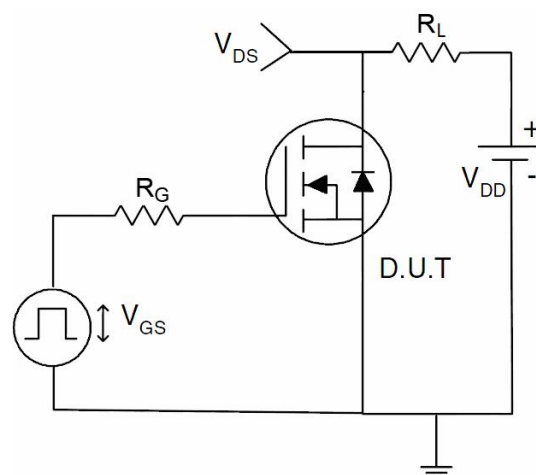
- EAS Test Circuits



- Gate Charge Test Circuit



- Switch Time Test Circuit



## Typical Characteristics

Figure 1. Output Characteristics

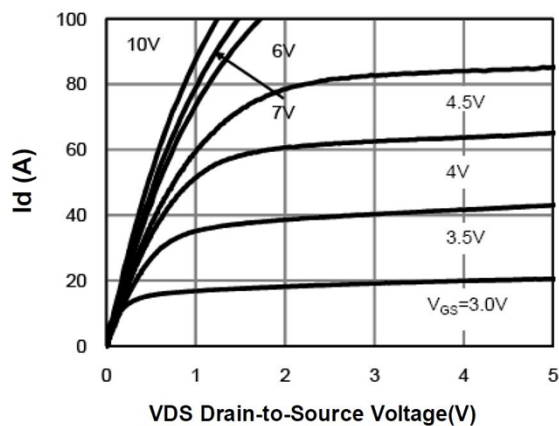


Figure 2. Transfer Characteristics

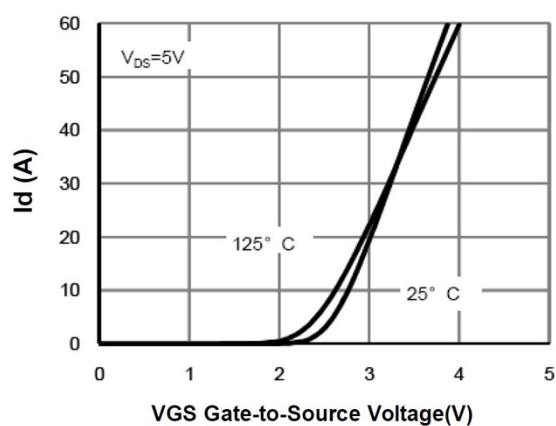


Figure 3. Max  $BV_{DSS}$  vs Junction Temperature

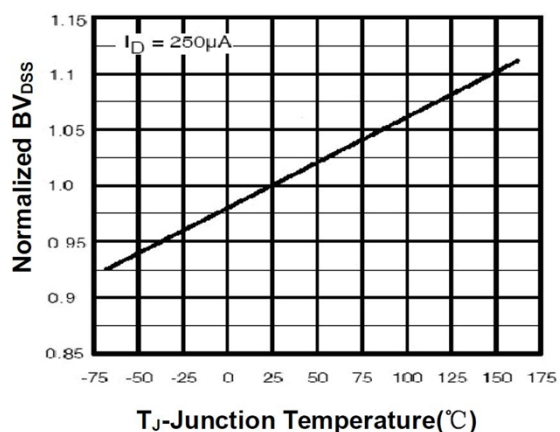


Figure 4. Drain Current

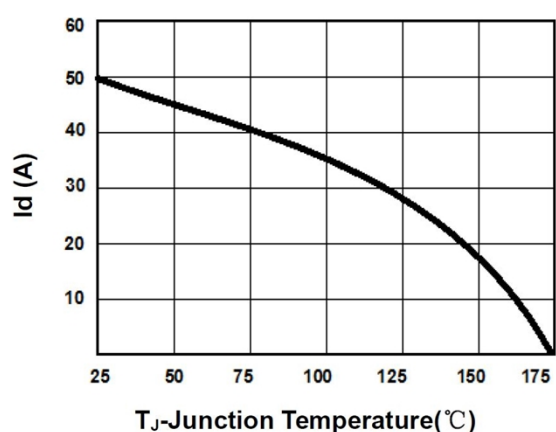


Figure 5.  $V_{GS(th)}$  vs Junction Temperature

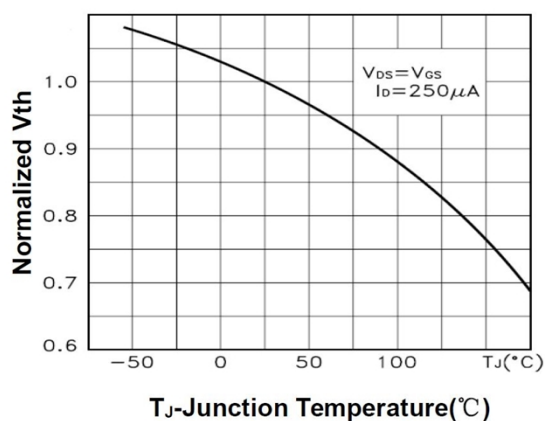


Figure 6.  $R_{DS(on)}$  vs Junction Temperature

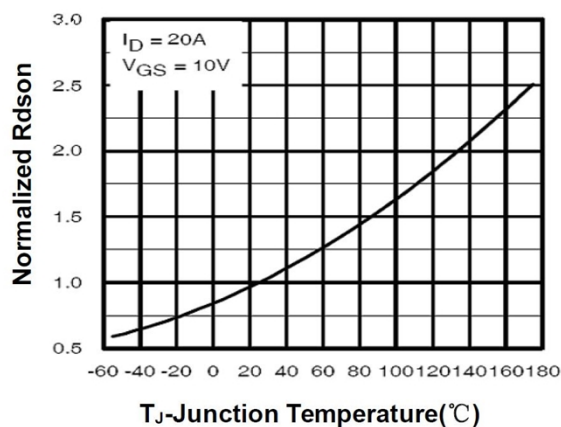


Figure 7. Gate Charge Waveforms

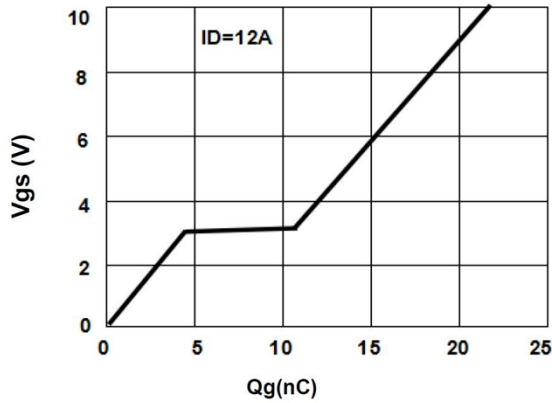


Figure 8. Capacitance

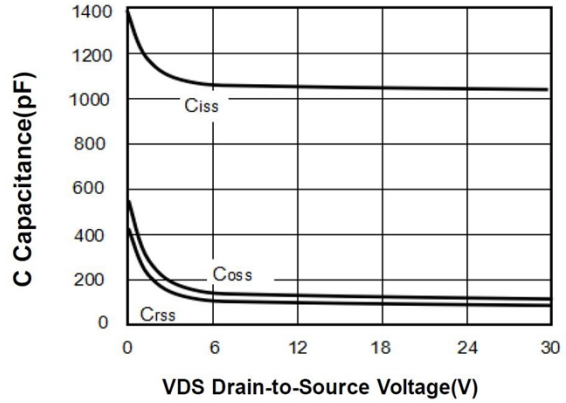


Figure 9. Body-Diode Characteristics

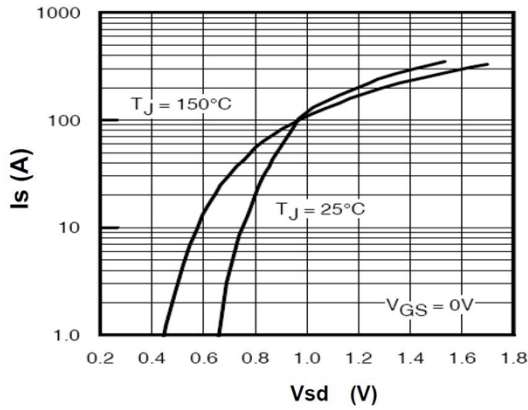


Figure 10. Maximum Safe Operating Area

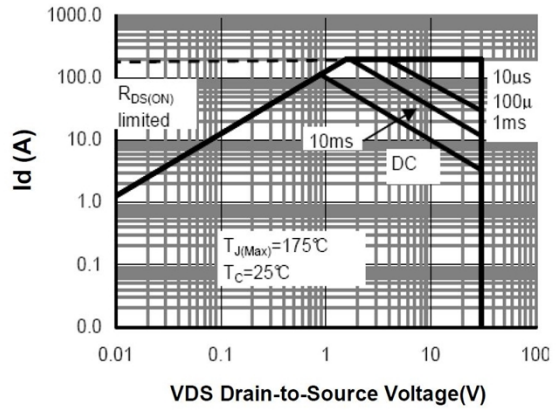
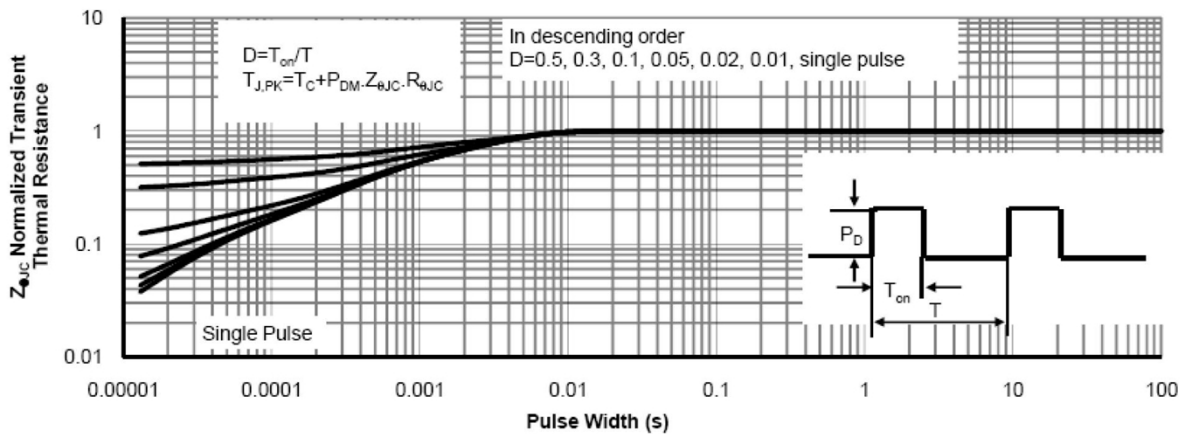
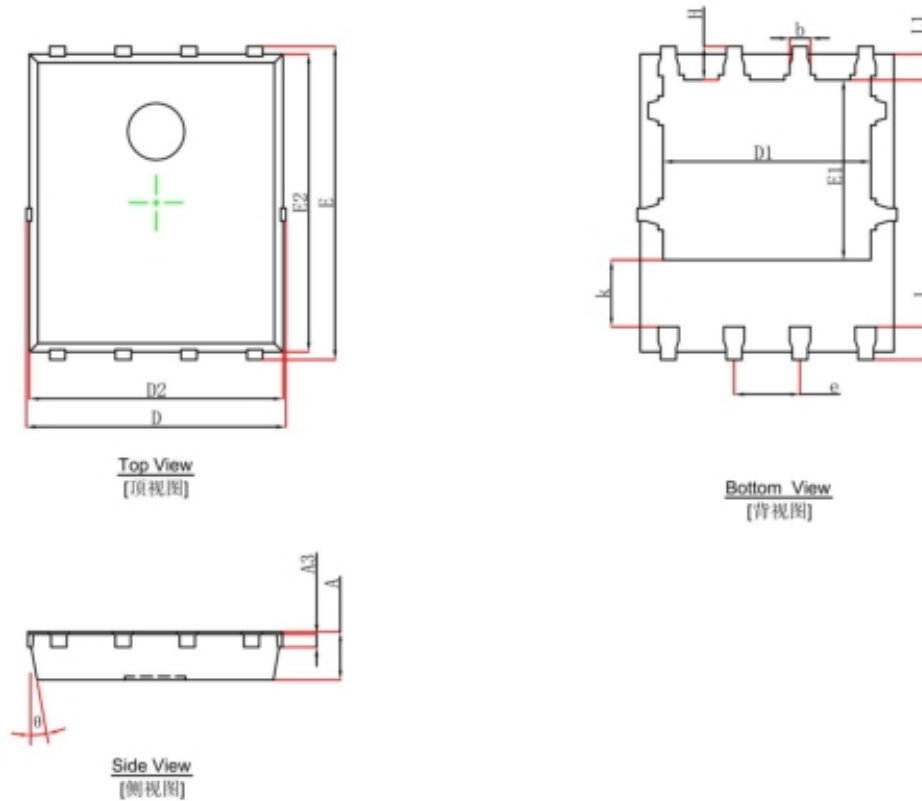


Figure 11. Normalized Maximum Transient Thermal Impedance



## PDFNWB5X6-8L Package Information



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
$\theta$	10°	12°	10°	12°