

60V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	2.3mΩ@10V	125A

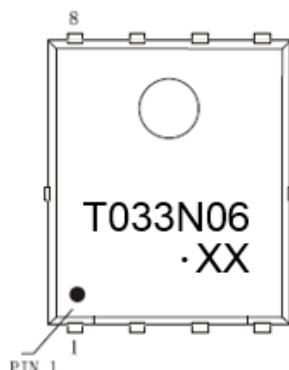
Feature

- Shielded Gate Trench Technology
- Low $R_{DS(on)}$
- Low Gate Charge
- AEC-Q101 qualified (Automotive grade with suffix "Q".)

Application

- High efficiency power supply
- Secondary synchronous rectifier

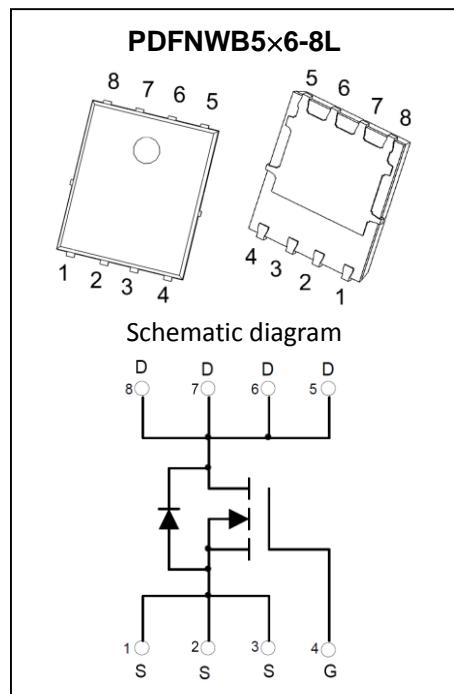
MARKING:



T033N06 = Device code

XX = Date Code

Solid dot = Green Device



ABSOLUTE MAXIMUM RATINGS ($T_c=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	125	A
Pulsed Drain Current	I_{DM}	600	A
Power Dissipation	P_D	3.1	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	40.3	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~+150	°C

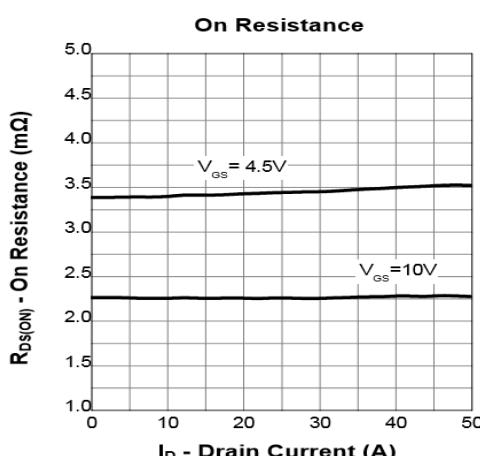
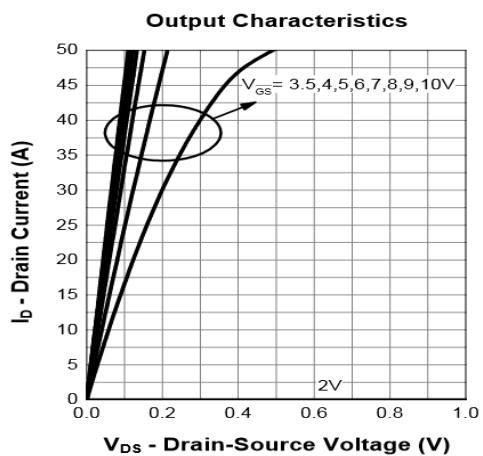
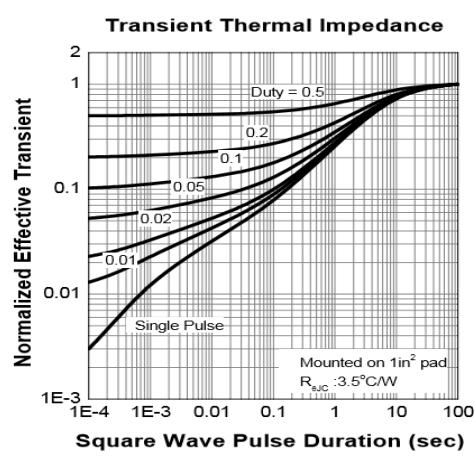
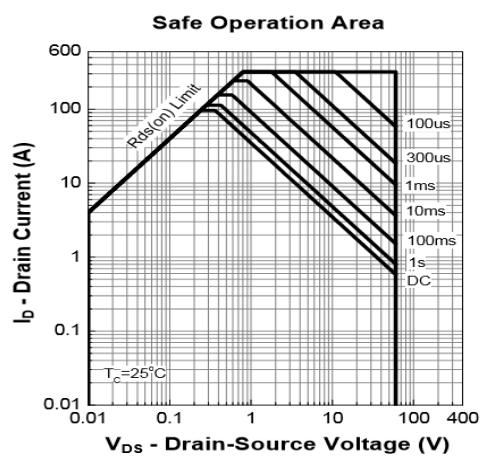
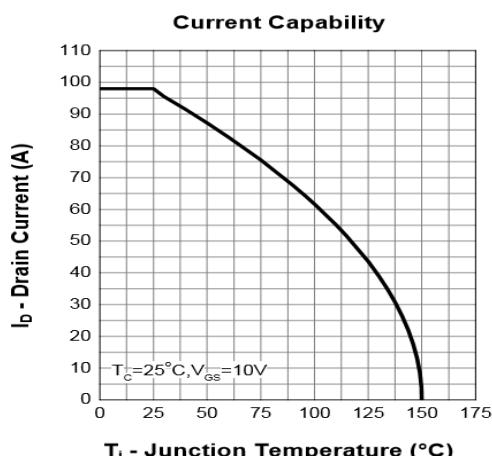
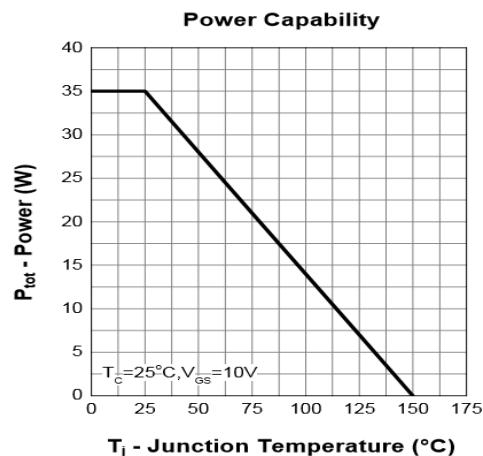
MOSFET ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise noted)

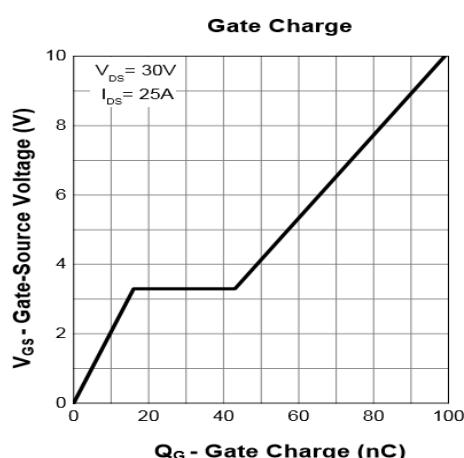
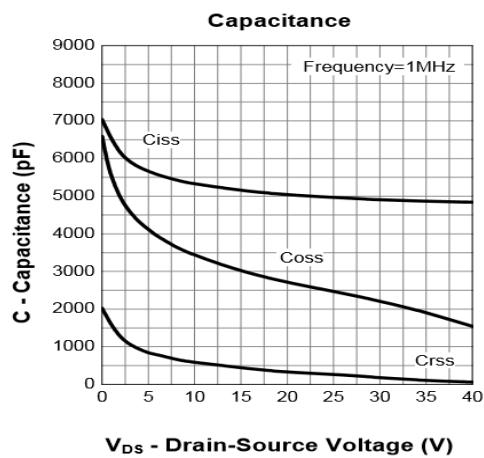
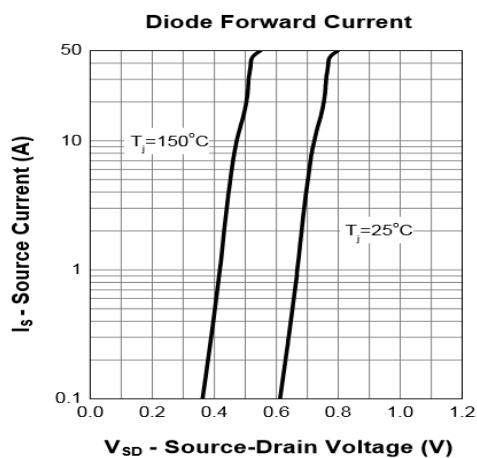
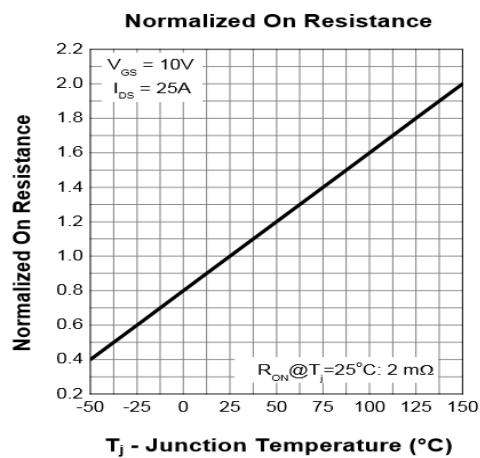
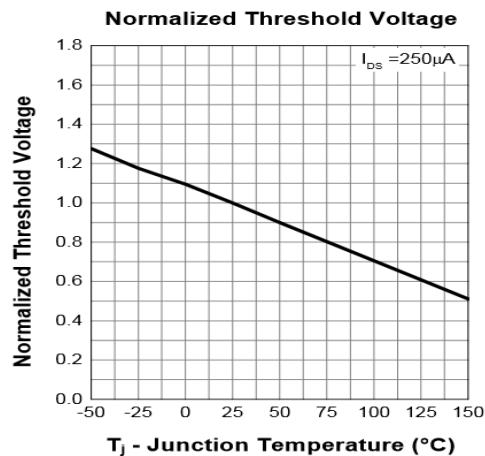
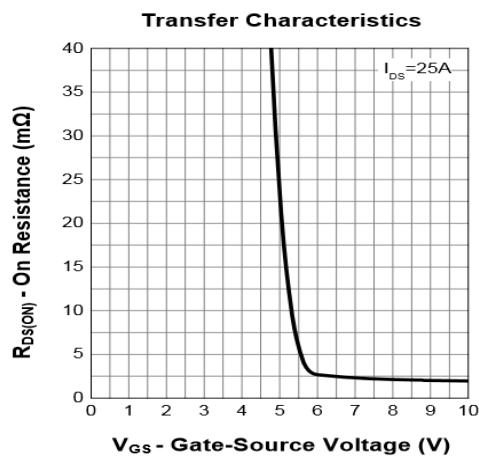
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{V}, I_{\text{D}} = 250\mu\text{A}$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{\text{DS}} = 48\text{V}, V_{\text{GS}} = 0\text{V}$			1	μA
Gate-body leakage current	I_{GSS}	$V_{\text{GS}} = \pm 20\text{V}, V_{\text{DS}} = 0\text{V}$			± 100	nA
Gate threshold voltage ¹	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}} = V_{\text{GS}}, I_{\text{D}} = 250\mu\text{A}$	1.0	2.0	3.0	V
Drain-source on-resistance ¹	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}} = 10\text{V}, I_{\text{D}} = 20\text{A}$		2.3	3.3	$\text{m}\Omega$
		$V_{\text{GS}} = 4.5\text{V}, I_{\text{D}} = 20\text{A}$		3.5	4.6	$\text{m}\Omega$
Dynamic characteristics²						
Input capacitance	C_{iss}	$V_{\text{DS}} = 30\text{V}, V_{\text{GS}} = 0\text{V}, f = 1\text{MHz}$		4895		pF
Output capacitance	C_{oss}			2208		
Reverse transfer capacitance	C_{rss}			171		
Switching Characteristics²						
Total gate charge	Q_g	$V_{\text{DS}} = 30\text{V}, V_{\text{GS}} = 10\text{V}, I_{\text{D}} = 25\text{A}$		99		nC
Gate-source charge	Q_{gs}			16		
Gate-drain charge	Q_{gd}			27		
Turn-on delay time	$t_{\text{d}(\text{on})}$	$V_{\text{DD}} = 30\text{V}, R_{\text{L}} = 1.2\Omega, I_{\text{D}} = 25\text{A}, V_{\text{GEN}} = 10\text{V}, R_{\text{g}} = 4.5\Omega$		14		ns
Turn-on rise time	t_r			36		
Turn-off delay time	$t_{\text{d}(\text{off})}$			75		
Turn-off fall time	t_f			50		
Diode Characteristics						
Diode Forward Voltage ¹	V_{SD}	$V_{\text{GS}} = 0\text{V}, I_{\text{S}} = 25\text{A}$			1.02	V

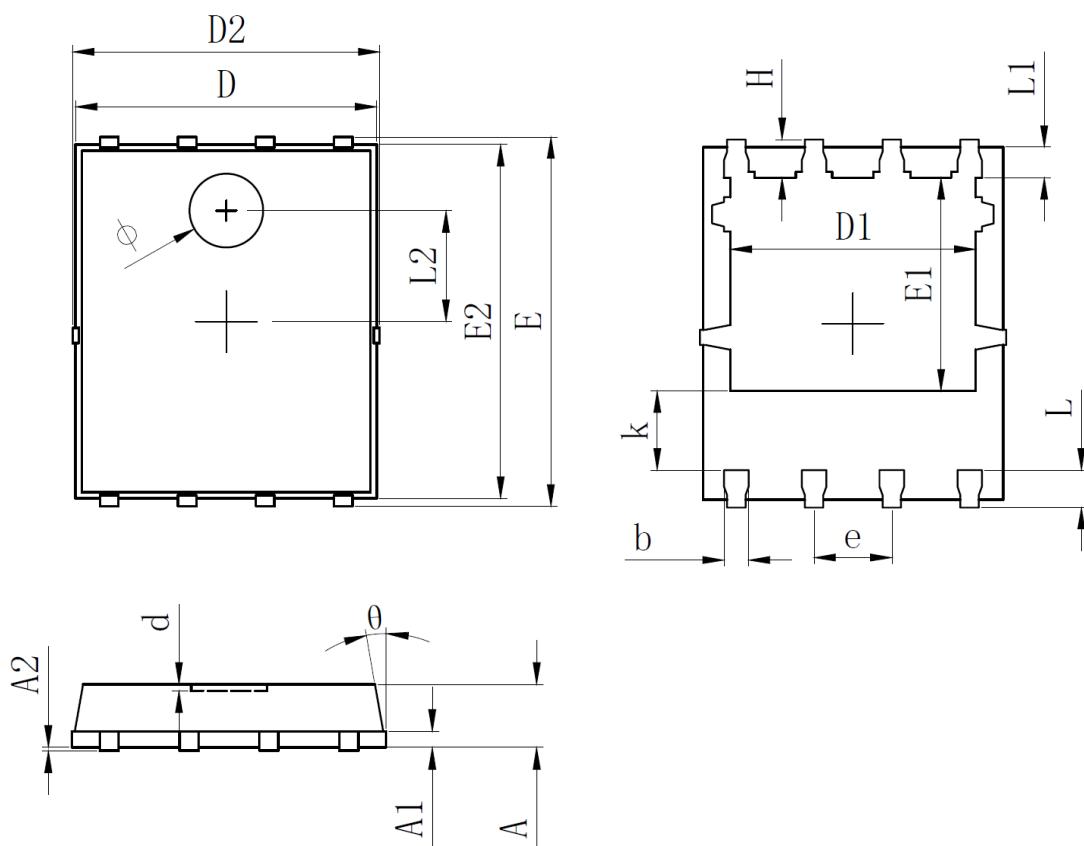
Notes:

1. Pulse Test : Pulse Width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics



Typical Electrical and Thermal Characteristics


PDFNWB5x6-8L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.254REF		0.010REF	
A2	0.000	0.050	0.000	0.002
D	4.824	4.976	0.190	0.196
D1	3.910	4.110	0.154	0.162
D2	4.924	5.076	0.194	0.200
E	5.924	6.076	0.233	0.239
E1	3.375	3.575	0.133	0.141
E2	5.674	5.826	0.223	0.229
b	0.350	0.450	0.014	0.018
e	1.270TYP		0.050TYP	
L	0.534	0.686	0.021	0.027
L1	0.424	0.576	0.017	0.023
k	1.190	1.390	0.047	0.055
H	0.549	0.701	0.022	0.028
θ	8°	12°	8°	12°
Φ	1.100	1.300	0.043	0.051
d	-	0.100	-	0.004