

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	18m Ω @-10V	-20A
	25m Ω @-4.5V	

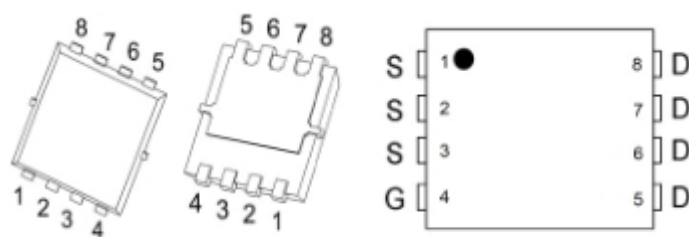
Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

Applications

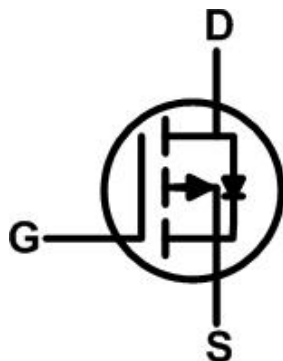
- Advanced trench process technology
- High density cell design for ultra-low on-resistance
- High power and current handing capability
- Ideal for Lion battery pack applications

Package

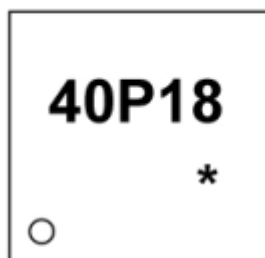


PDFNWB3.3×3.3-8L

Circuit diagram



Marking



40P18 = Device Code
***** = Month Code

Absolute maximum ratings

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-20	A
Pulsed Drain Current	I_{DM}	-80	A
Power Dissipation	P_D	30	W
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	4.17	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 To 150	$^{\circ}\text{C}$

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 = -250μA	-40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -40V, V _{GS} = 0V			-1	uA
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	uA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.1	-1.7	-2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -5A		18	26	mΩ
		V _{GS} = -4.5V, I _D = -5A		25	35	
Forward Transconductance	g _{FS}	V _{DS} =-5V,I _D =-5A	20			S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -20V, V _{GS} =0V, f=1MHz		1750		pF
Output Capacitance	C _{oss}			215		
Reverse Transfer Capacitance	C _{rss}			180		
Switching Characteristics						
Turn-on Delay Time	T _{d(on)}	V _{DD} = -20V, R _L =2Ω, V _{GS} = -10V, R _G =3Ω		9		nS
Turn-on Rise Time	T _r			8		
Turn-off Delay Time	T _{d(off)}			28		
Turn-off Fall Time	T _f			10		
Total Gate Charge	Q _g	V _{DS} = -20V, , I _D = -5A V _{GS} = -10V		24		nC
Gate-Source Charge	Q _{gs}			3.5		
Gate-Drain Charge	Q _{gd}			6		
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S = -1A			-1.2	V

Notes:

1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production

Typical Characteristics

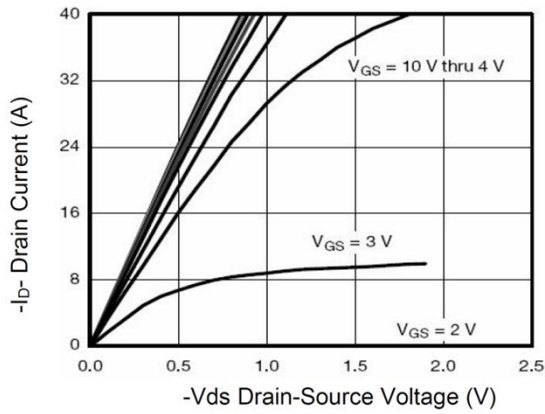


Figure 1 Output Characteristics

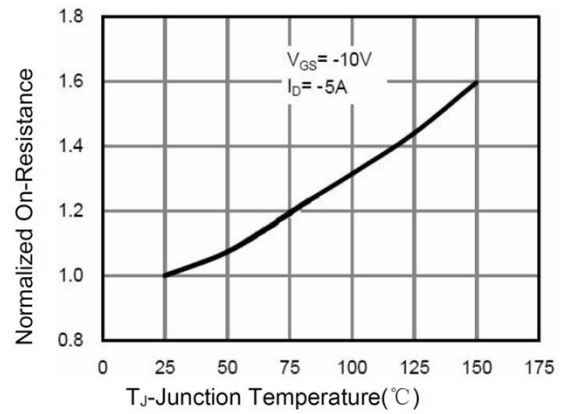


Figure 4 Rdson-Junction Temperature

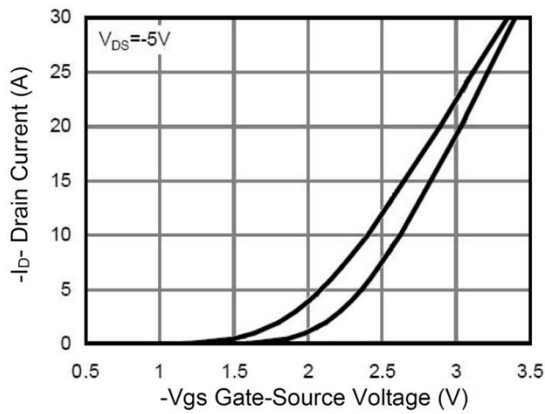


Figure 2 Transfer Characteristics

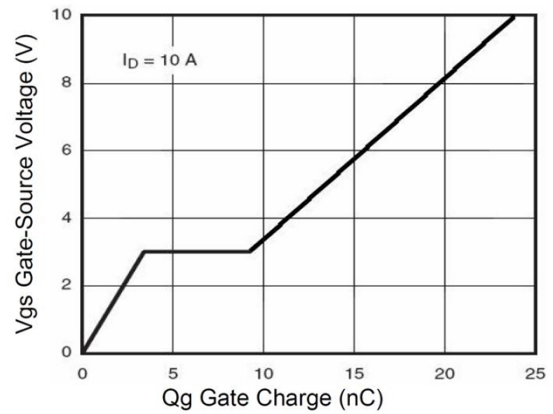


Figure 5 Gate Charge

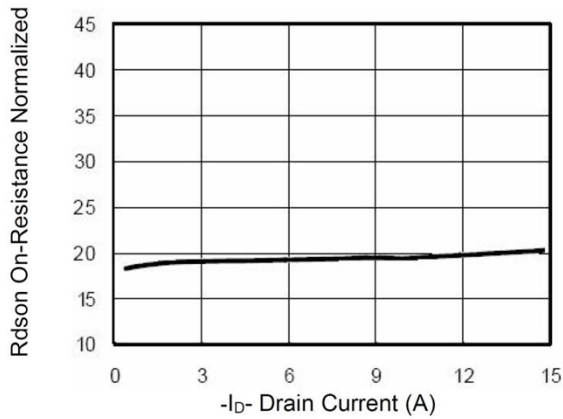


Figure 3 Rdson- Drain Current

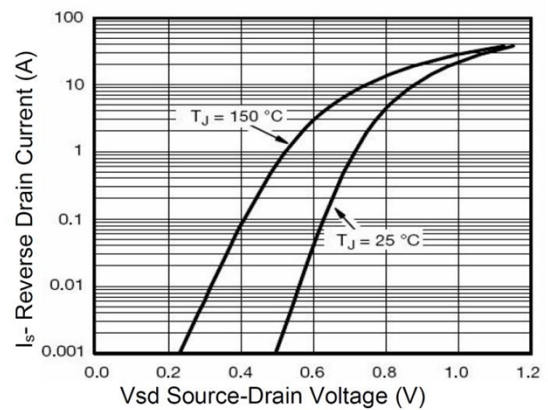


Figure 6 Source- Drain Diode Forward

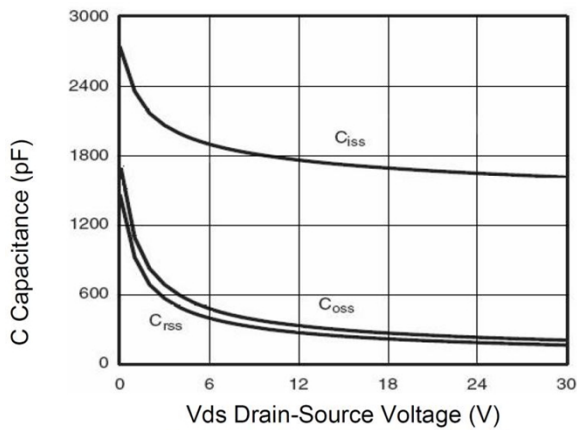


Figure 7 Capacitance vs Vds

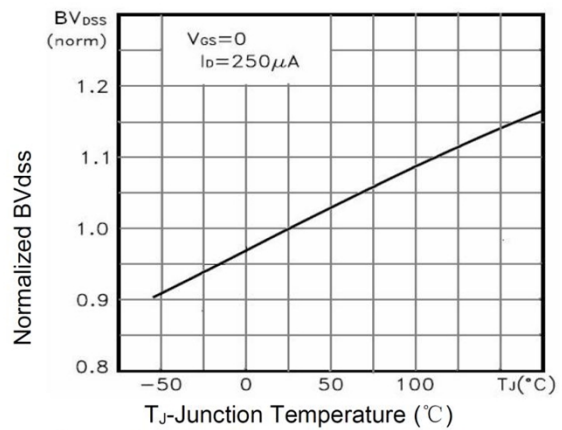


Figure 9 BV_{DSS} vs Junction Temperature

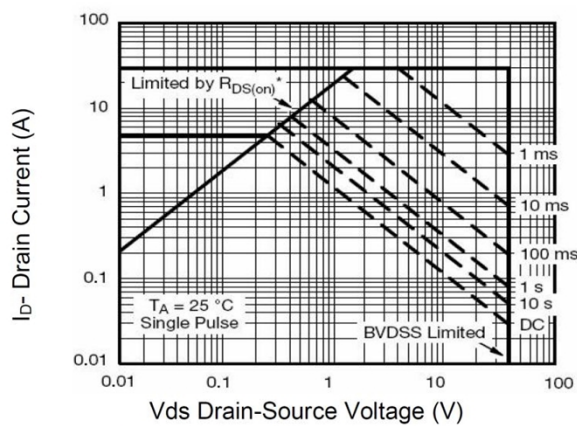


Figure 8 Safe Operation Area

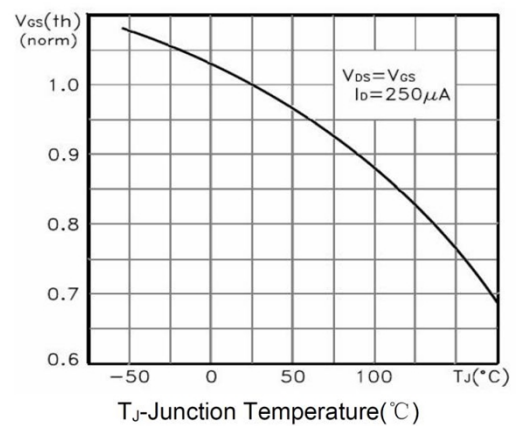


Figure 10 $V_{GS(th)}$ vs Junction Temperature

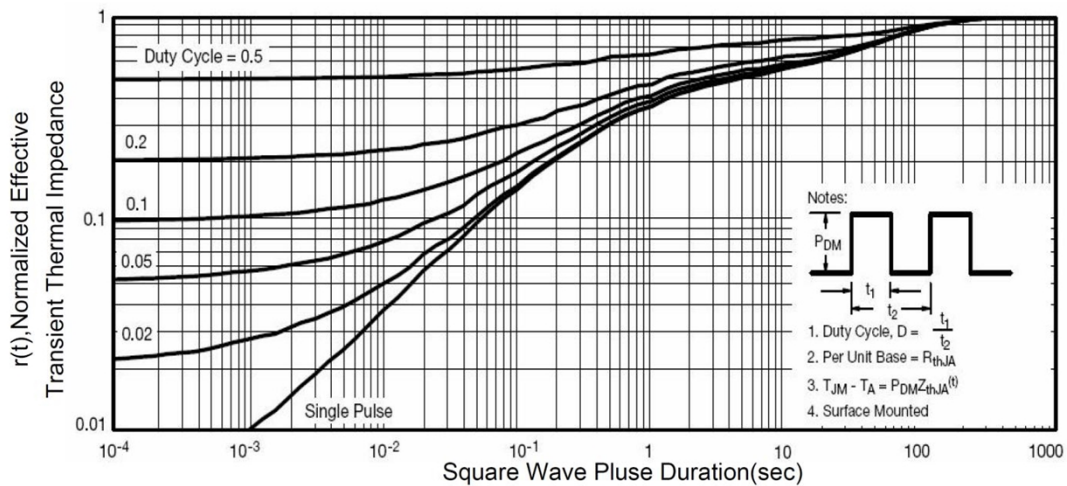
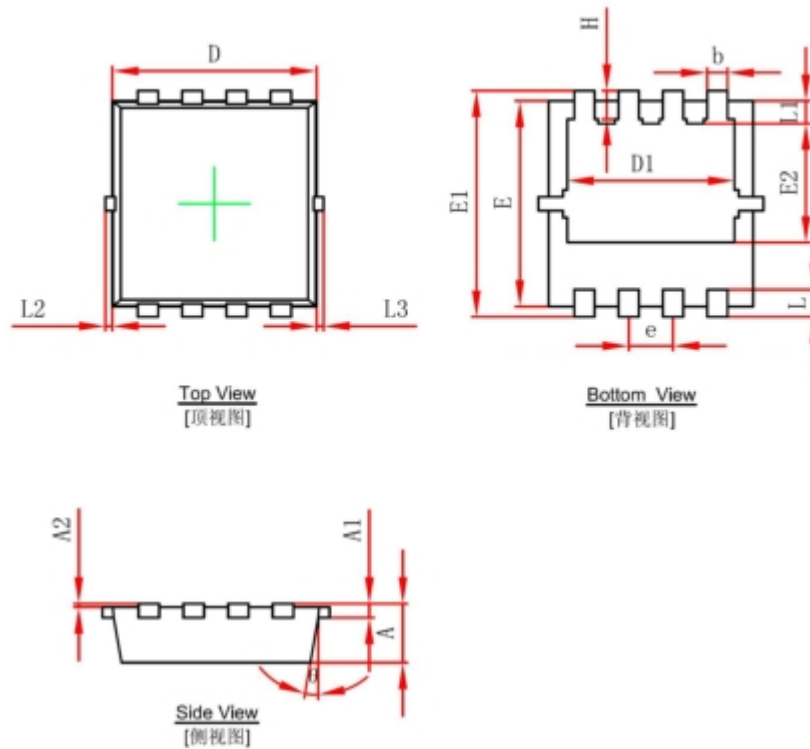


Figure 11 Normalized Maximum Transient Thermal Impedance

PDFNWB3.3×3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°