

FEATURES

| $V_{DS}=20V, I_D=40A$

| $R_{DS(ON) Typ} = 3.2m\Omega @ V_{GS} = 4.5V$

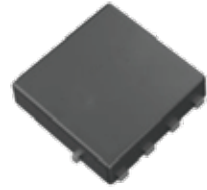
| $R_{DS(ON) Typ} = 4.6m\Omega @ V_{GS} = 2.5V$

| Advanced Trench Technology

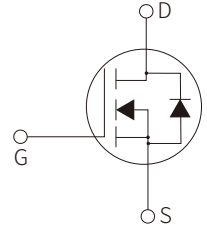
| Excellent $R_{DS(ON)}$ and Low Gate Charge

| 100% UIS TESTED!

| 100% ΔV_{ds} TESTED!



PDFN3×3-8L



Schematic Symbol

APPLICATION

| Load Switch

| PWM Application

| Power Management

APPROVALS

RoHS Compliance with 2011/65/EU

HF Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ C$)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Continuous Drain Current	I_D	$T_c=25^\circ C$	40
		$T_c=100^\circ C$	24
Pulsed Drain Current ¹	I_{DM}	160	A
Gate Source Voltage	V_{GS}	± 12	V
Total Power Dissipation $T_c=25^\circ C$	P_D	24.3	W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	20			V
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1.0	μA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.4	0.7	1	V
Static Drain-Source ON-Resistance ²	R _{DS(on)}	V _{GS} =4.5V, I _D =20A		3.2	5	mΩ
		V _{GS} =2.5V, I _D =15A		4.6	6	mΩ
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =10V, f = 1MHz		2374		pF
Output capacitance	C _{oss}			412		pF
Reverse transfer capacitance	C _{rss}			376		pF
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =0 to 4.5V I _D =5A		40		nC
Gate-Source Charge	Q _{gs}			3		nC
Gate Drain ("Miller") Charge	Q _{gd}			7		nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V, V _{GS} =4.5V R _{GEN} =3Ω, I _D =5A		17		nS
Turn-on Rise Time	t _r			45		nS
Turn-Off Delay Time	t _{d(off)}			81.5		nS
Turn-Off Fall Time	t _f			70		nS
Drain-Source Diode Characteristics and Max Ratings						
Drain to Source Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =20A di/dt = 100A/us		14		nS
Body Diode Reverse Recovery Charge	Q _{rr}			3.8		nC
Maximum Continuous Drain to Source Diode Forward Current	I _S				40	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}				160	A

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%

PARAMETER CHARACTERISTIC CURVE

Fig 1: Typical Output Characteristics

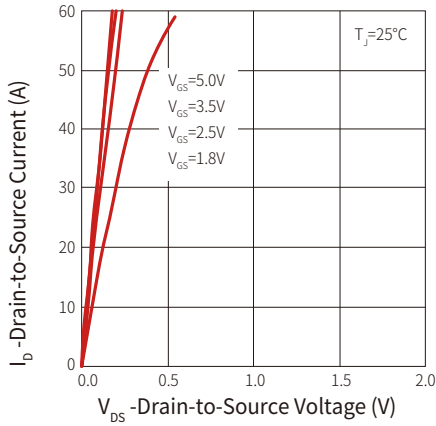


Figure 2: Typical Gate Charge vs Gate to Source Voltage

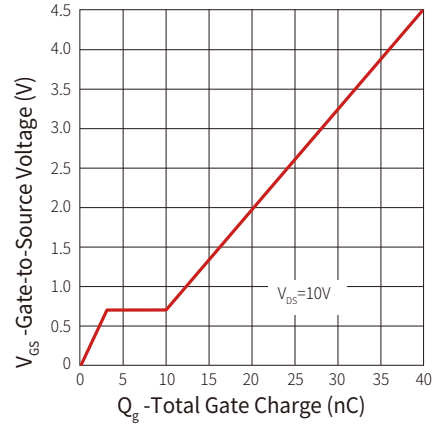


Figure 3: Typical Body Diode Transfer Characteristics

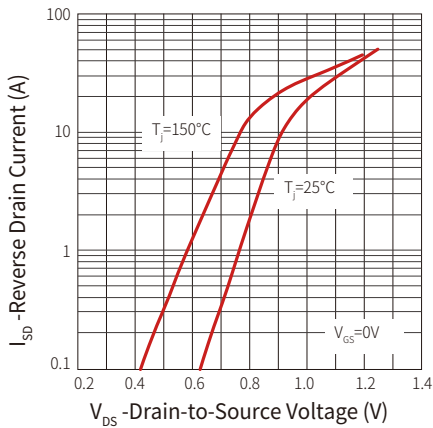


Figure 4: Typical Capacitance vs Drain to Source Voltage

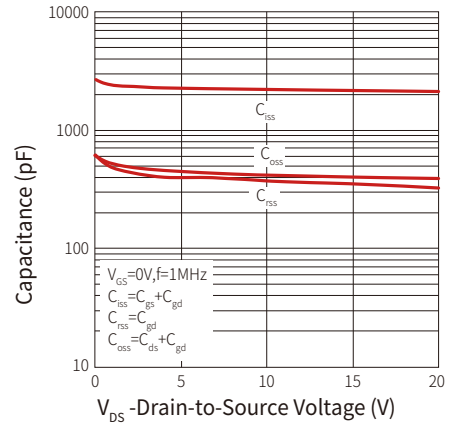


Figure 5: Typical Breakdown Voltage vs Junction Temperature

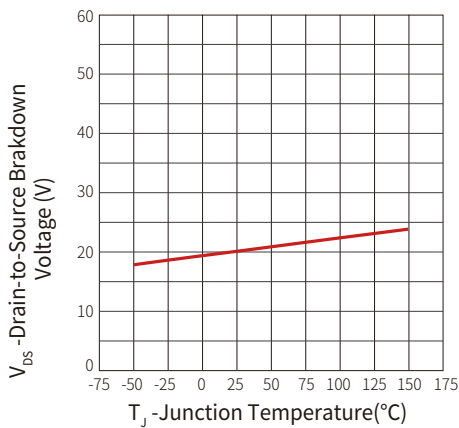


Figure 6: Typical Drain to Source on Resistance vs Junction Temperature

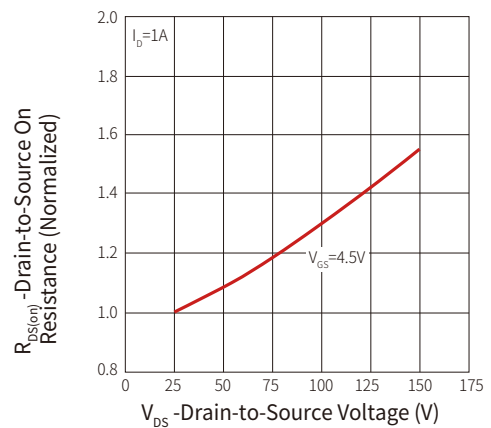


Figure 7: Maximum Forward Bias Safe Operating Area

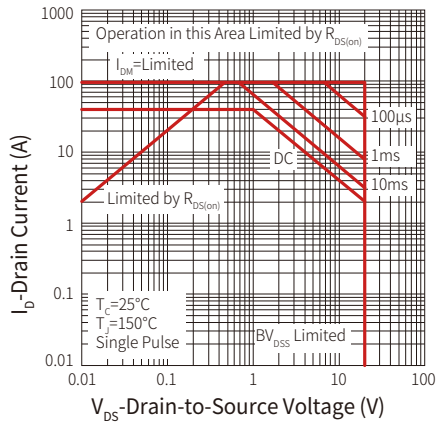


Figure 8: Typical Drain to Source ON Resistance vs Drain Current

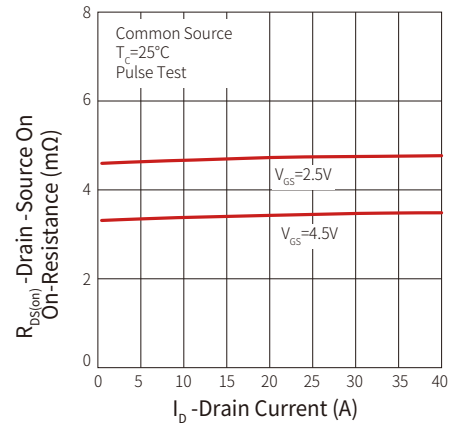


Figure 9: Maximum Effective Thermal Impedance Junction to Case

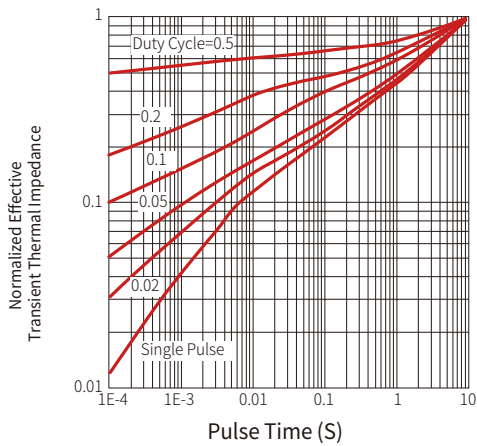
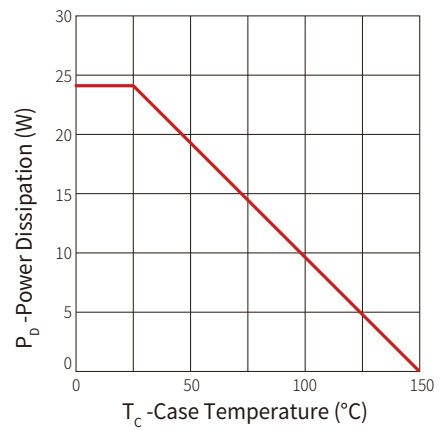
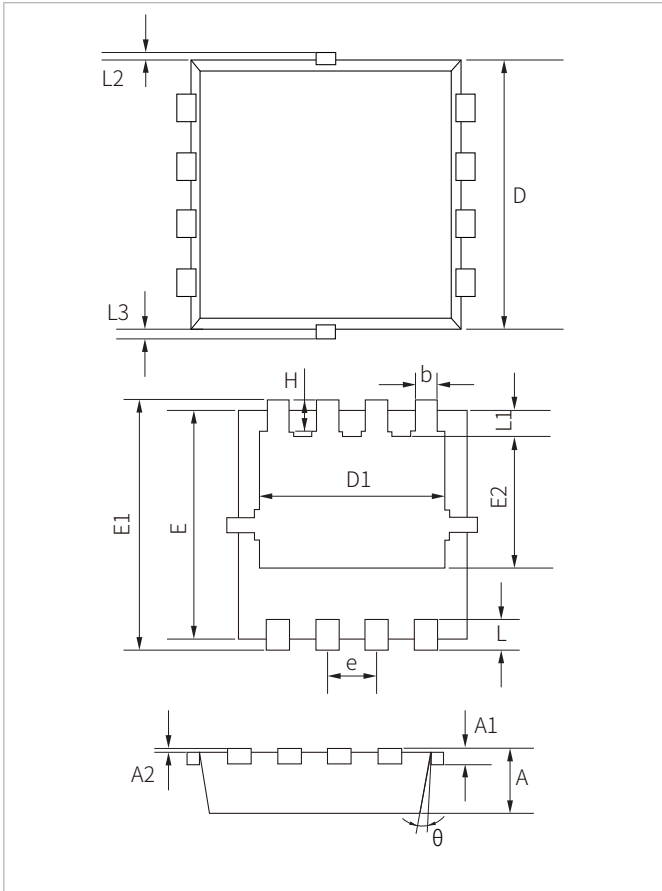


Figure 10: Maximum Power Dissipation vs Case Temperature



PDFN3x3-8L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152REF		0.006REF	
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°

ORDERING INFORMATION

Part Number	Component Package	Marking	QTY/Reel	Reel Size
SNM40N02Q	PDFN3×3-8L	 40N02 XXXX	5000PCS	13"

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