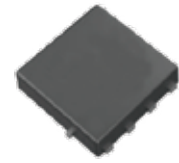
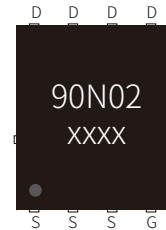


FEATURES

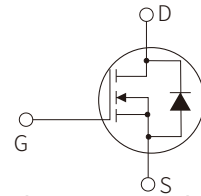
- | 100% EAS Guaranteed
- | Green Device Available
- | Super Low Gate Charge
- | Excellent CdV/dt effect decline
- | Advanced high cell density Trench technology



PDFN5×6-8L



Marking



Schematic Symbol

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, V_{GS} @ 10V	I_D	$T_C=25^{\circ}\text{C}$ 90	A
		$T_C=100^{\circ}\text{C}$ 59	A
Pulsed Drain Current	I_{DM}	360	A
Total Power Dissipation $T_C=25^{\circ}\text{C}$	P_D	88	W
Single Pulse Avalanche Energy	EAS	118	mJ
Avalanche Current	I_{AS}	41	A
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.8	$^{\circ}\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Off Characteristic						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V,I _D =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V,V _{GS} =0V			1	μA
Gate to Body Leakage Current	I _{GSS}	V _{GS} =±12V,V _{DS} =0V			±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	0.4	0.7	1.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V,I _D =30A		2.7	3.5	mΩ
		V _{GS} =2.5V,I _D =20A		4	5.2	mΩ
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} =0V,V _{DS} =10V, f = 1.0MHz		3200		pF
Output capacitance	C _{oss}			460		pF
Reverse transfer capacitance	C _{rss}			445		pF
Total Gate Charge	Q _g	V _{DS} =10V,V _{GS} =4.5V,I _D =30A		48		nC
Gate-Source Charge	Q _{gs}			3.6		nC
Gate-Drain Charge	Q _{gd}			19		nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DS} =10V,V _{GS} =4.5V R _G = 1.8Ω, I _D =30A		9.7		nS
Turn-on Rise Time	t _r			37		nS
Turn-Off Delay Time	t _{d(off)}			63		nS
Turn-Off Fall Time	t _f			52		nS
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S				90	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 _{SD} =30A, T _J =25°C			1.2	V
Reverse Recovery Time	t _{rr}	T _J =25°C, I _F =30A, di/dt=100A/μs		23		ns
Reverse Recovery Charge	Q _{rr}			10		nC

CHARACTERISTIC CURVES

Figure 1: Output Characteristics

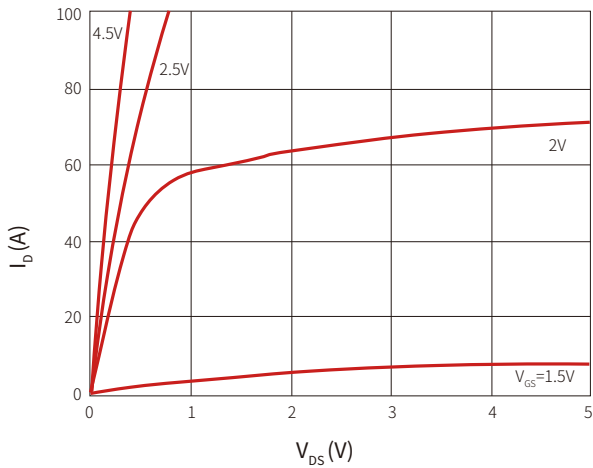


Figure 2: Typical Transfer Characteristics

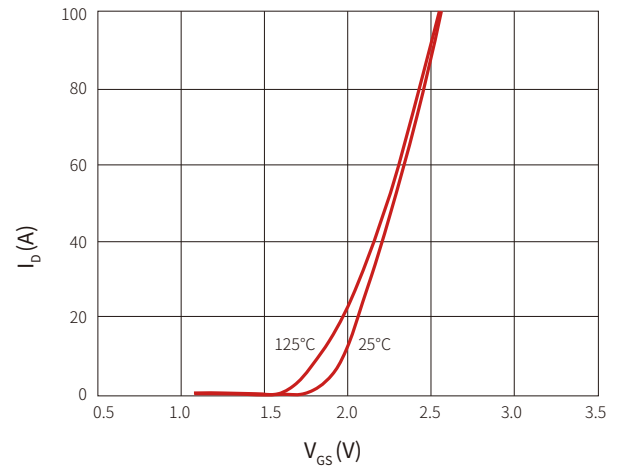


Figure 3: On-resistance vs. Drain Current

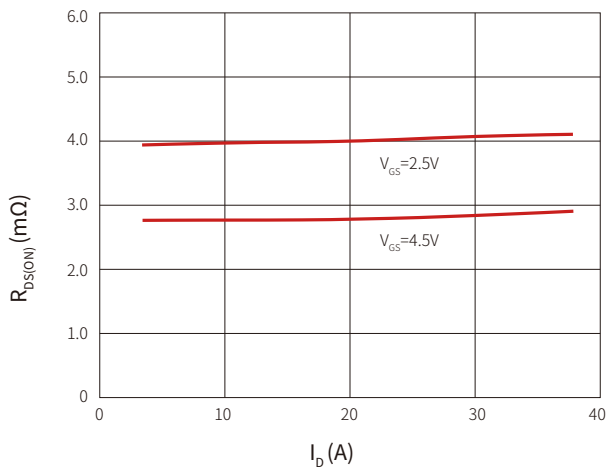


Figure 4: Body Diode Characteristics

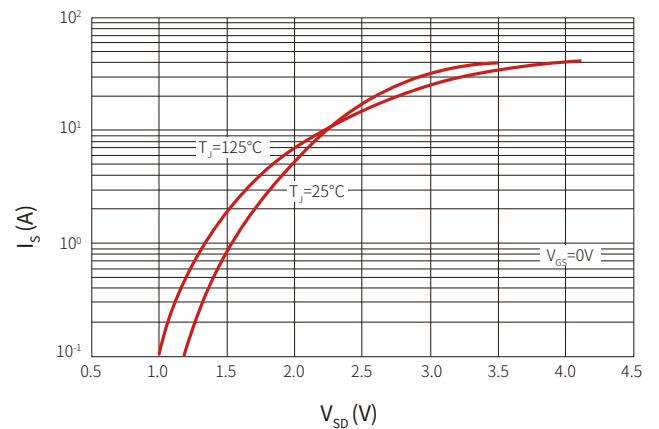


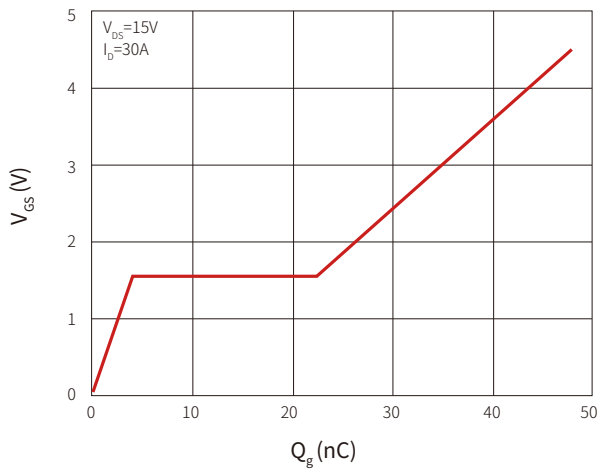
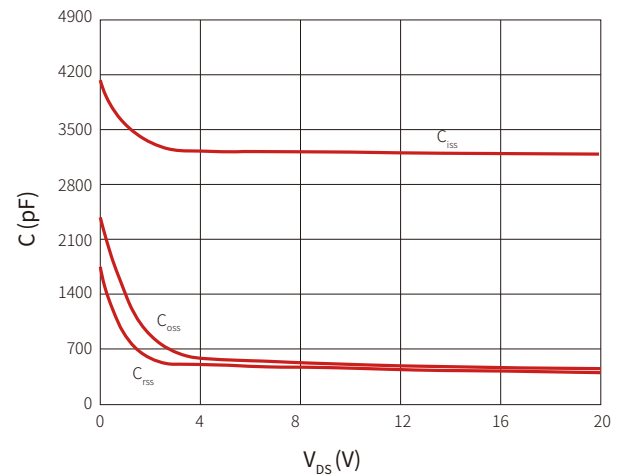
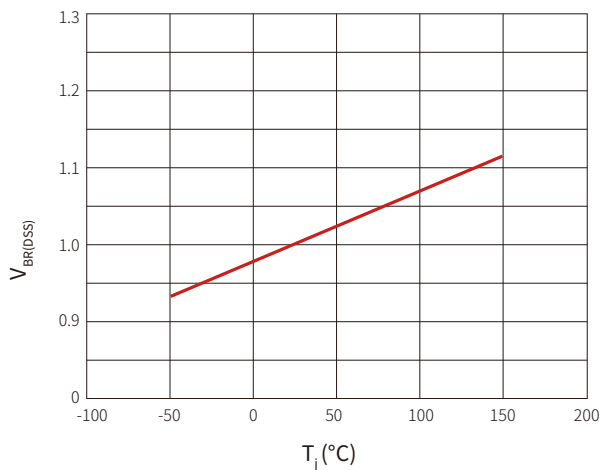
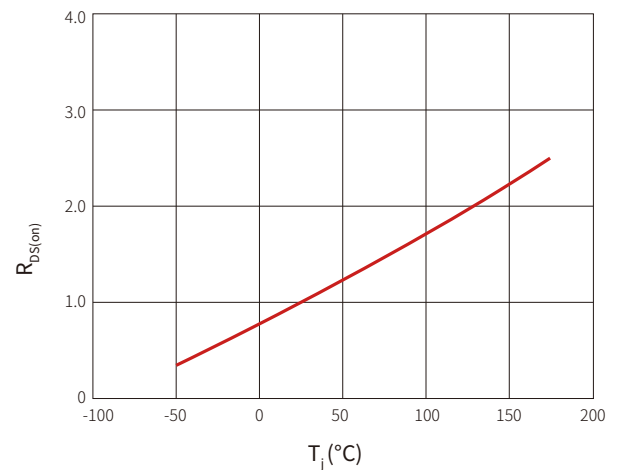
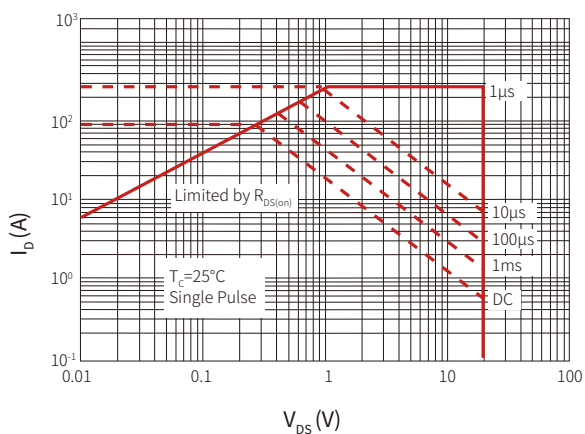
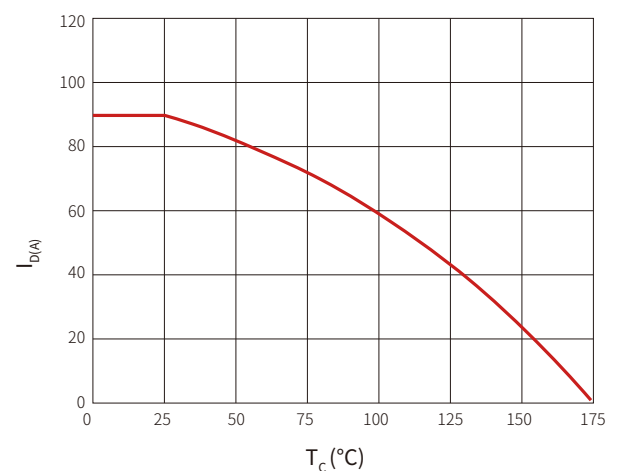
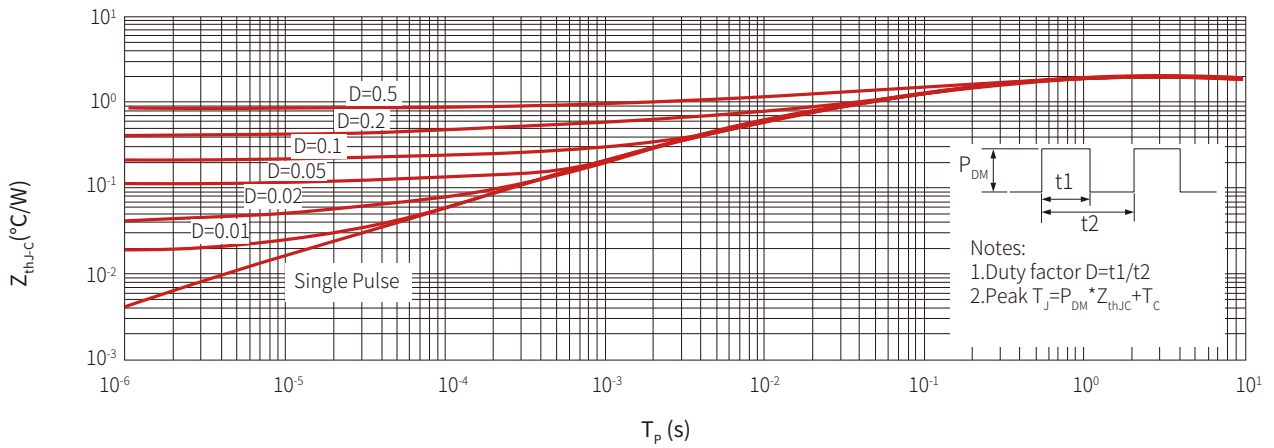
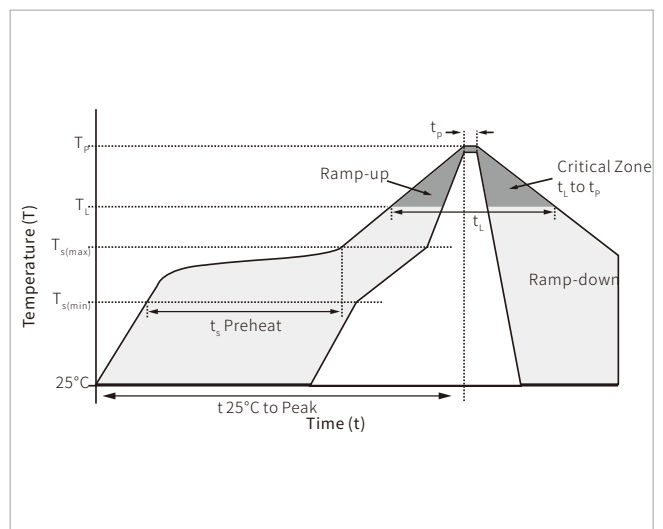
Figure 5: Gate Charge Characteristics

Figure 6: Capacitance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

Figure 8: Normalized on Resistance vs. Junction Temperature

Figure 9: Maximum Safe Operating Area

Figure 10: Maximum Continuous Drain Current vs. Case Temperature


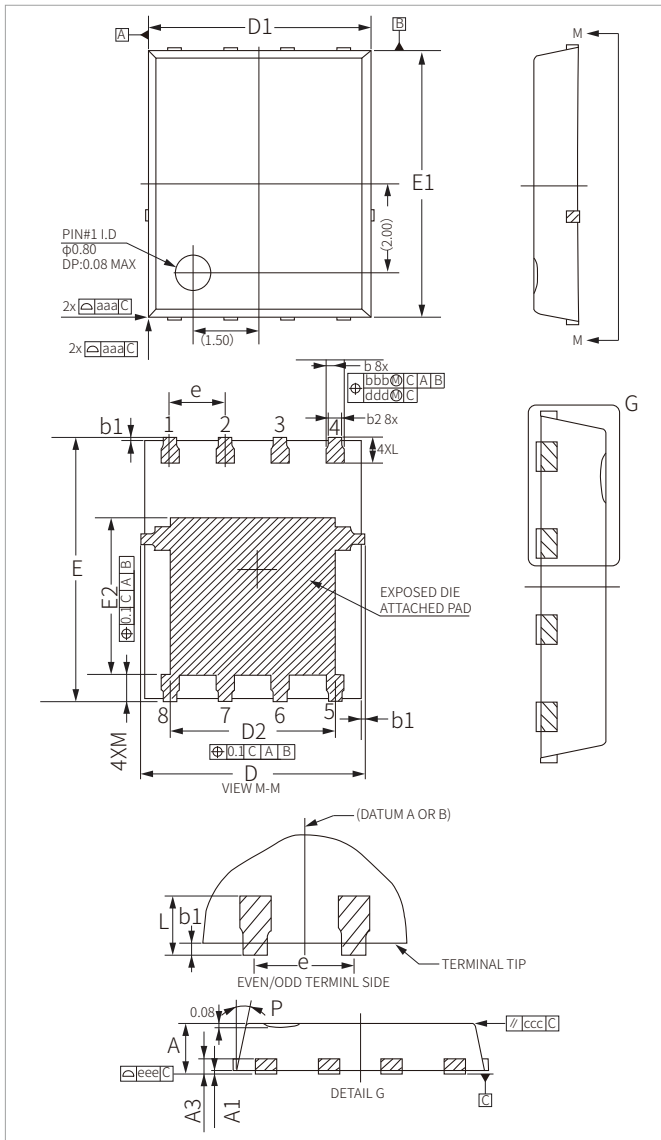
Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Case


SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C



PDFN5×6-8L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
A1	0.00	0.05	0.000	0.002
A3	0.254REF		0.010REF	
b	0.31	0.51	0.012	0.020
b1	0.03	0.13	0.001	0.005
b2	0.21	0.41	0.008	0.016
D	5.15BSC		0.203BSC	
D1	5.00BSC		0.197BSC	
D2	3.70	3.90	0.146	0.154
E	6.15BSC		0.242BSC	
E1	6.00BSC		0.236BSC	
E2	3.56	3.76	0.140	0.148
e	1.27BSC		0.050BSC	
L	0.51	0.71	0.020	0.028
M	0.51	0.71	0.020	0.028
P	10°	12°	0.394°	0.472°
aaa	0.10		0.004	
bbb	0.10		0.004	
ccc	0.10		0.004	
ddd	0.05		0.002	
eee	0.08		0.003	

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNM90N02G	PDFN5×6-8L	5000PCS	13"

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