

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
120V	9mΩ@10V	90A
	12mΩ@4.5V	

Feature

- Advanced Split Gate Trench Technology
- Excellent $R_{DS(on)}$
- Low Gate Charge

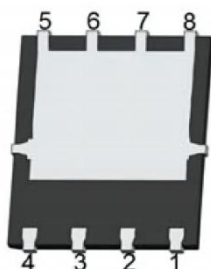
Application

- Mobile phone fast charging
- Brushless motor
- Home appliance control board

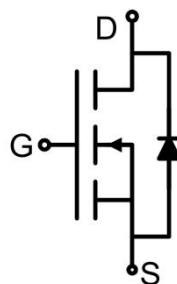
Package



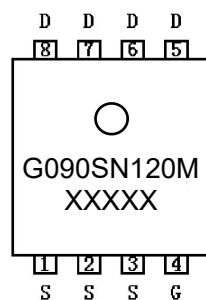
PDFN5*6-8L



Circuit diagram



Marking



Absolute maximum ratings (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	120	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾	I _D	90	A
Continuous Drain Current ¹⁾ (T _C =70°C)	I _D (70°C)	35	A
Pulsed Drain Current ²⁾	I _{DM}	270	A
Single Pulse Avalanche Energy ⁴⁾	E _{AS}	125	mJ
Power Dissipation ³⁾	P _D	160	W
Thermal Resistance Junction to Case	R _{θJC}	0.78	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	120			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =120V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.5	2	2.5	V
Drain-source on-resistance ⁴⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		7.5	9	mΩ
		V _{GS} =4.5V, I _D =10A		9	12	
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =60V, V _{GS} =0V, f =1MHz		1854		pF
Output Capacitance	C _{oss}			270		
Reverse Transfer Capacitance	C _{rss}			10		
Total Gate Charge	Q _g	V _{DS} =60V, V _{GS} =10V, I _D =20A		30		nC
Gate-Source Charge	Q _{gs}			5.8		
Gate-Drain Charge	Q _{gd}			6		
Turn-on delay time	t _{d(on)}	V _{DS} =60V, V _{GS} =10V, I _D =20A R _G =3Ω		9.5		nS
Turn-on rise time	t _r			4.2		
Turn-off delay time	t _{d(off)}			27.2		
Turn-off fall time	t _f			6.6		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C =25℃			90	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse recover time	T _{rr}	I _S =20A, di/dt =100A/us		52		nS
Reverse recovery charge	Q _{rr}			83.5		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The data tested by pulsed , pulse width .The EAS data shows Max. Rating.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) EAS condition: T_J=25°C, V_{DD}=50V, V_{GS}=10V, L=0.1mH, I_{AS}=30A.
- 5) Guaranteed by design, not subject to production.

Typical Characteristics

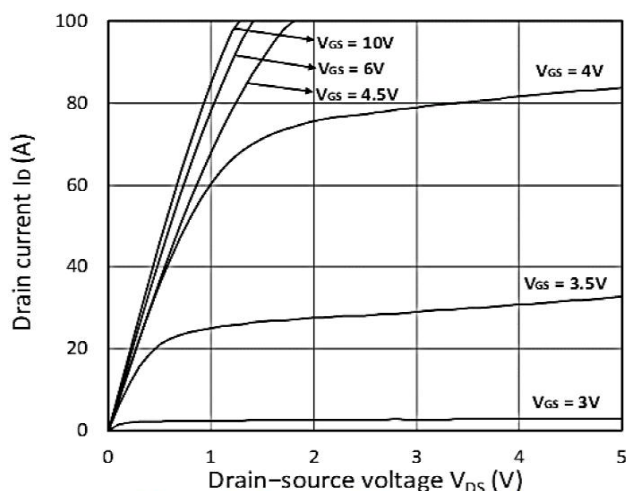


Figure 1. Output Characteristics

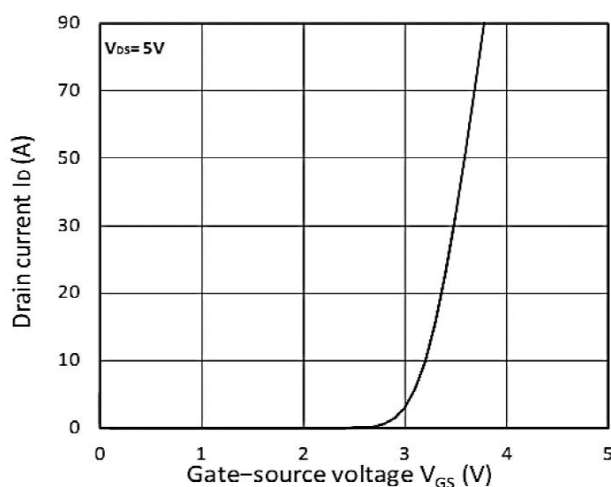


Figure 2. Transfer Characteristics

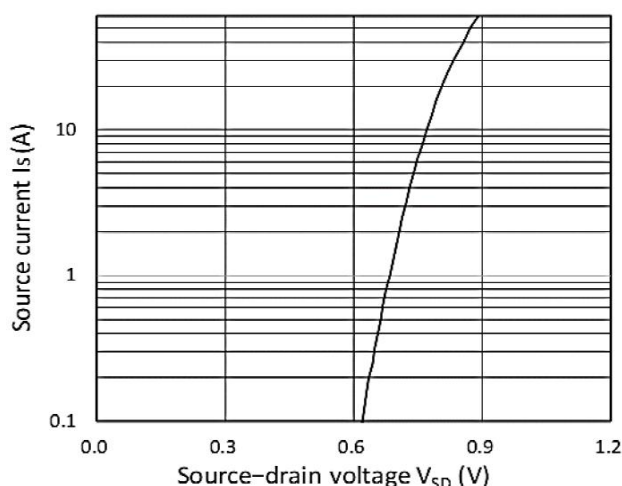


Figure 3. Forward Characteristics of Reverse

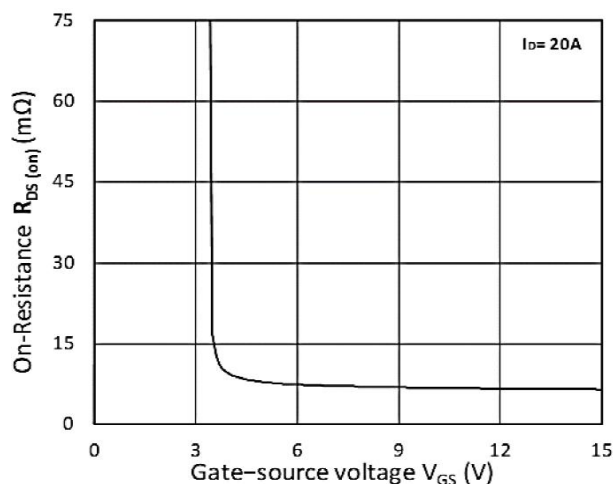


Figure 4. R_DS(ON) vs. V_GS

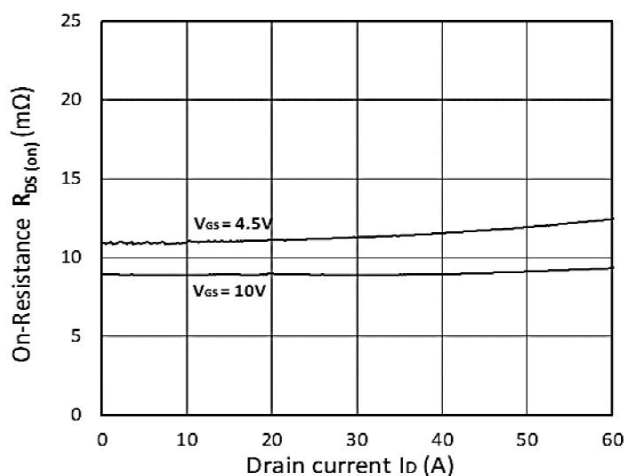


Figure 5. R_DS(ON) vs. I_D

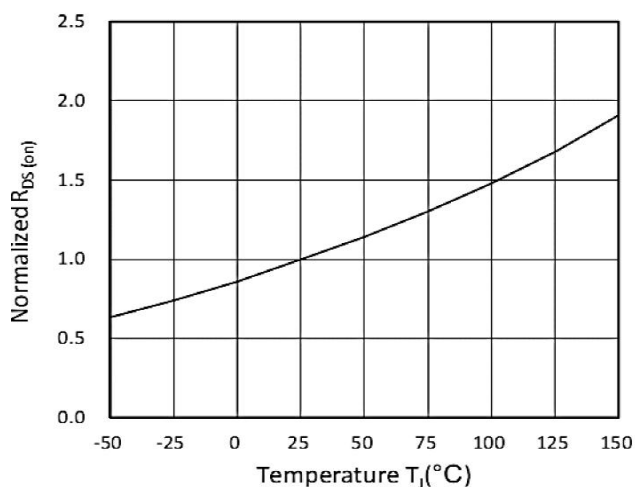


Figure 6. Normalized R_DS(on) vs. Temperature

Typical Characteristics

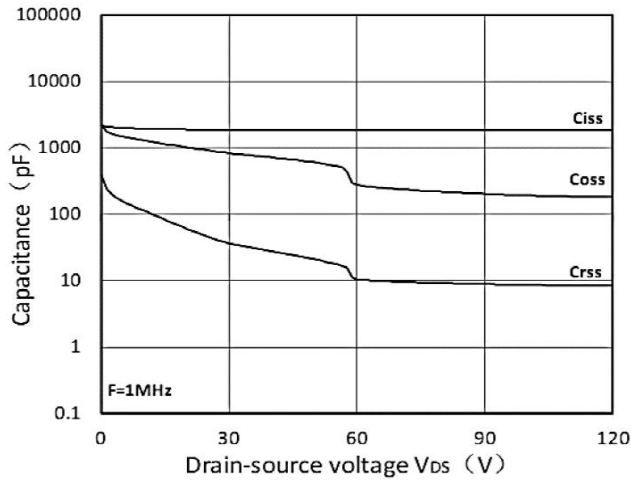


Figure 7. Capacitance Characteristics

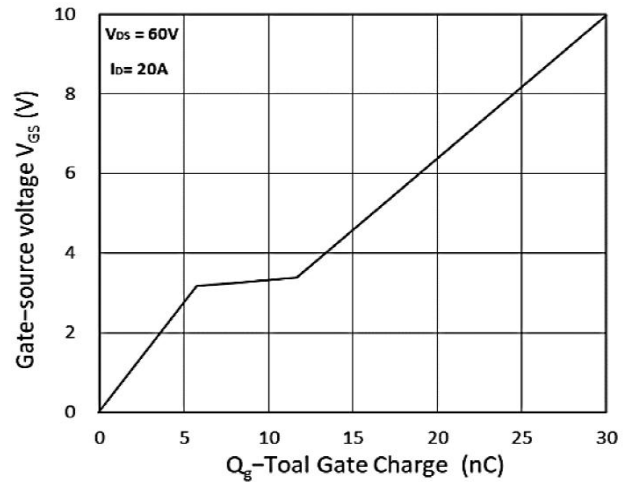


Figure 8. Gate Charge Characteristics

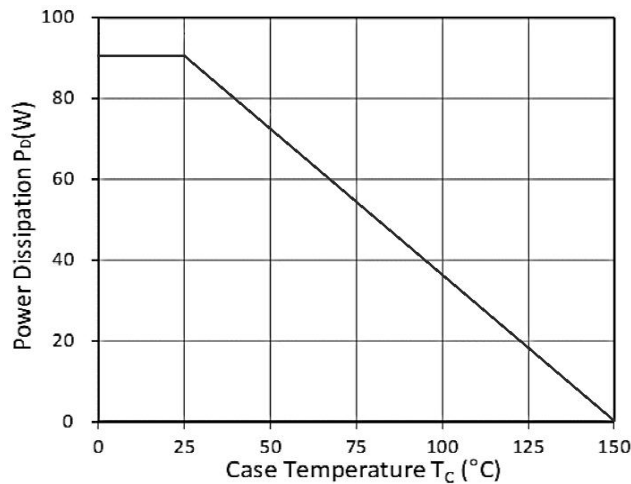


Figure 9. Power Dissipation

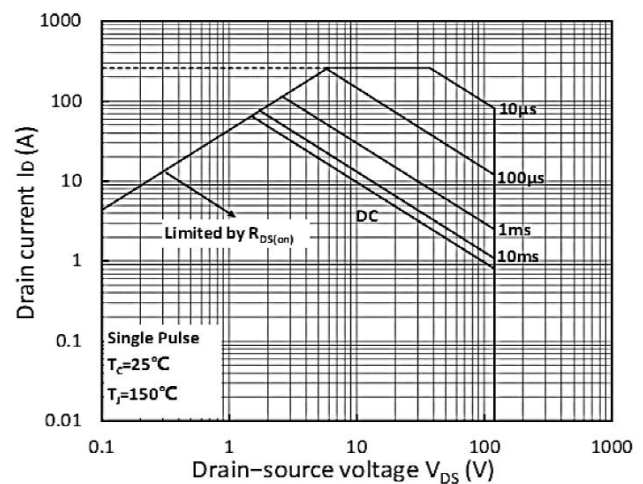


Figure 10. Safe Operating Area

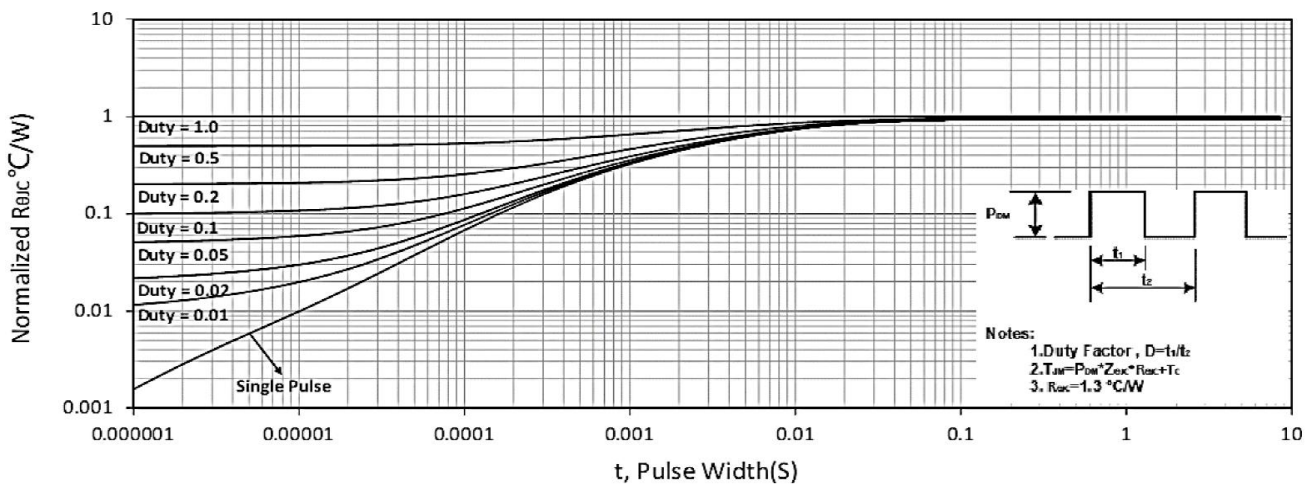
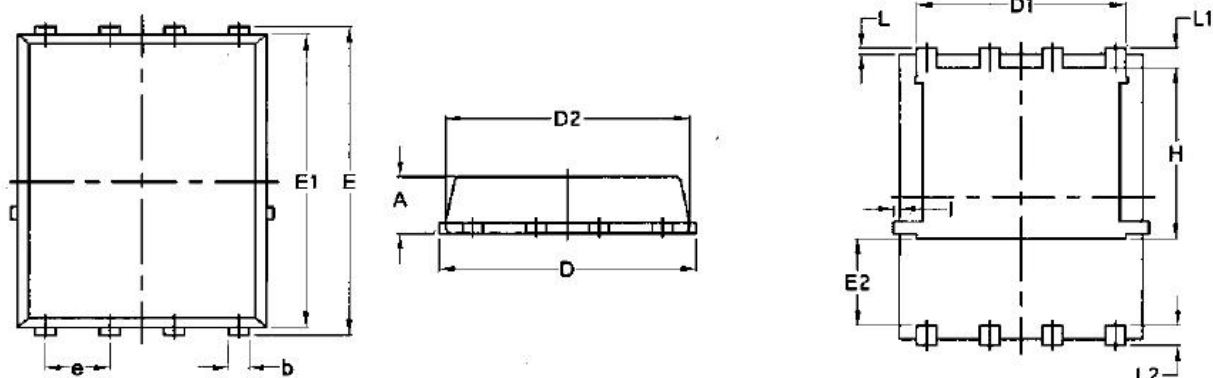


Figure 11. Normalized Maximum Transient Thermal Impedance

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.030	1.170	0.041	0.046
b	0.340	0.480	0.013	0.019
c	0.824	0.970	0.032	0.038
D	4.800	5.400	0.189	0.213
D1	4.110	4.310	0.162	0.170
D2	4.800	5.000	0.189	0.197
E	5.950	6.150	0.234	0.242
E1	5.650	5.850	0.222	0.230
E2	1.600	-	0.063	-
e	1.270 BSC.		0.050 BSC.	
L	0.050	0.250	0.002	0.010
L1	0.380	0.500	0.015	0.020
L2	0.380	0.500	0.015	0.020
H	3.300	3.500	0.130	0.138
I	-	0.180	-	0.007