

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	3.0mΩ@10V	130A
	4.5mΩ@4.5V	

Feature

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity or Invertors

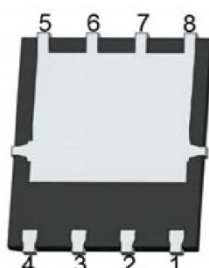
Application

- Consumer electronic power supply Motor control
- Synchronous-rectification Isolated DC
- Synchronous-rectification applications

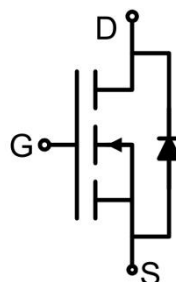
Package



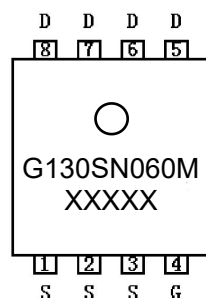
PDFN5*6-8L



Circuit diagram



Marking



Absolute maximum ratings ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹⁾	I_D	130	A
Pulsed Drain Current ²⁾	I_{DM}	390	A
Single Pulse Avalanche Energy ⁴⁾	E_{AS}	80	mJ
Power Dissipation ³⁾	P_D	140	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.89	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_J=25^{\circ}\text{C}$, 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	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, 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		2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		2.5	3	mΩ
		V _{GS} =4.5V, I _D =10A		3.5	4.5	
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =100KHz		5377		pF
Output Capacitance	C _{oss}			1666		
Reverse Transfer Capacitance	C _{rss}			77.7		
Gate-Source Charge	Q _{gs}	V _{DS} =30V, V _{GS} =10V, I _D =25A		10.7		
Gate-Drain Charge	Q _{gd}			10.9		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =25A R _G =2Ω		22.5		nS
Turn-on rise time	t _r			6.7		
Turn-off delay time	t _{d(off)}			80.3		
Turn-off fall time	t _f			26.8		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				130	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.3	V
Reverse recover time	T _{rr}	I _S =25A, di/dt =100A/us		68.3		nS
Reverse recovery charge	Q _{rr}			73		nC
Peak reverse recovery current	I _{rrm}			1.9		A

Notes:

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) P_D is based on max. junction temperature, using junction-case thermal resistance.
- 4) $V_{DD} = 50V, R_{\theta} = 25^{\circ}\text{C}/\text{W}, L = 0.3\text{mH}$, starting $T_J = 25^{\circ}\text{C}$.
- 5) Guaranteed by design, not subject to production.

Typical Characteristics

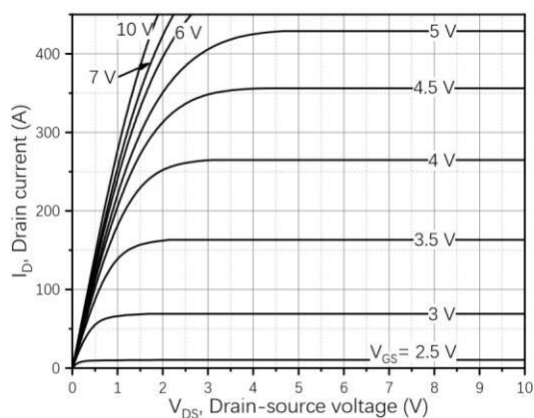


Figure 1, Typ. output characteristics

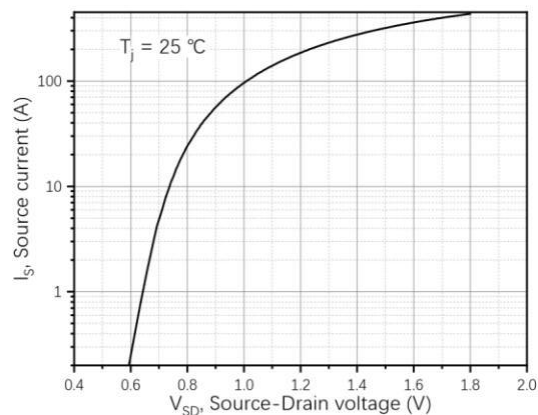


Figure 2, Typ. transfer characteristics

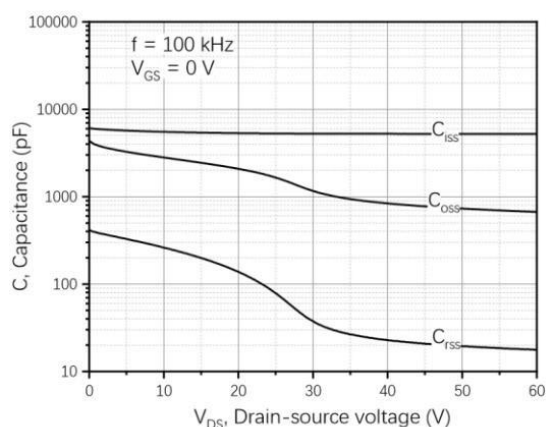


Figure 3, Typ. capacitances

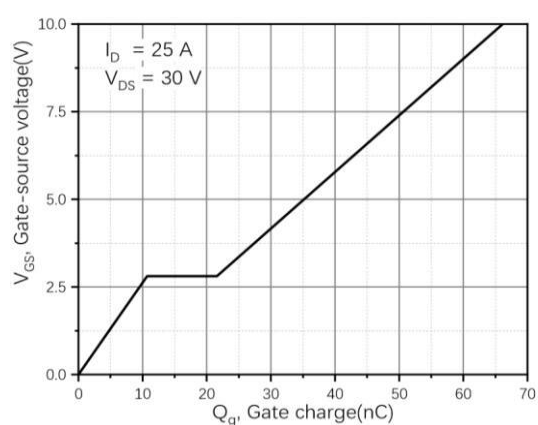


Figure 4, Typ. gate charge

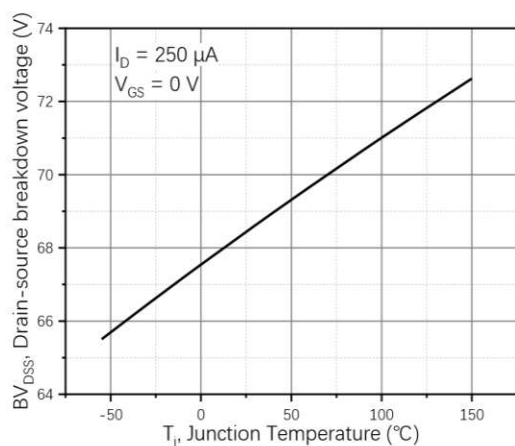


Figure 5, Drain-source breakdown voltage

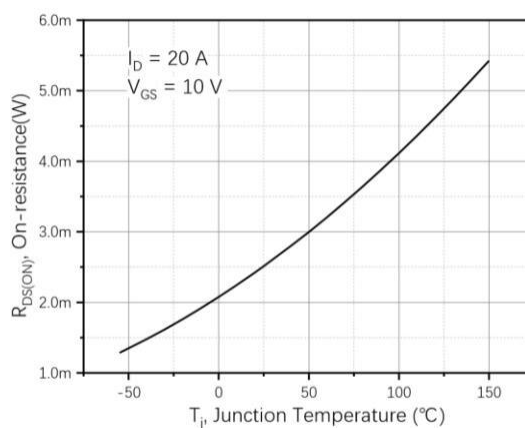


Figure 6, Drain-source on-state resistance

Typical Characteristics

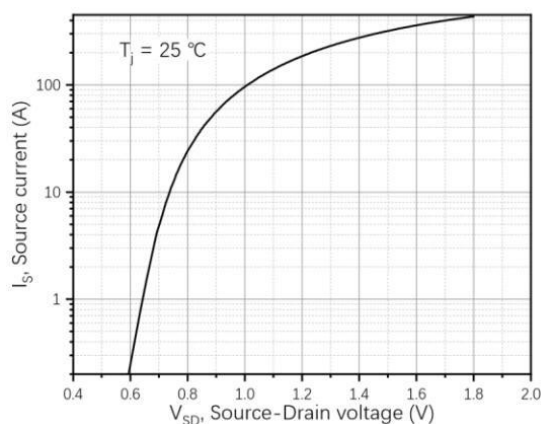


Figure 7, Forward characteristic of body diode

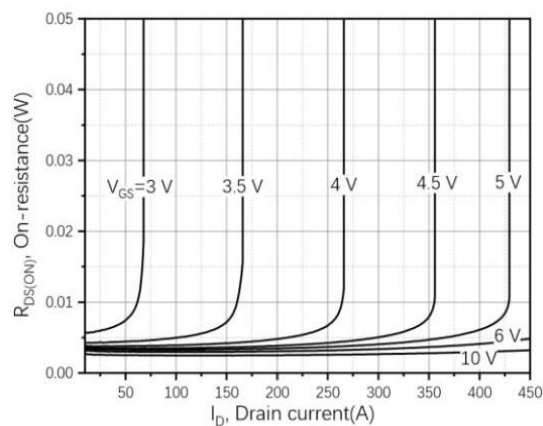


Figure 8, Drain-source on-state resistance

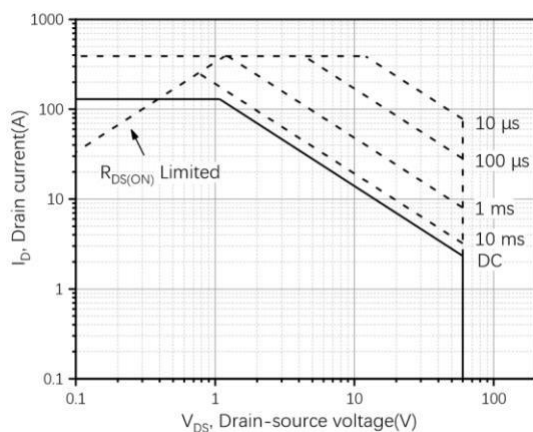
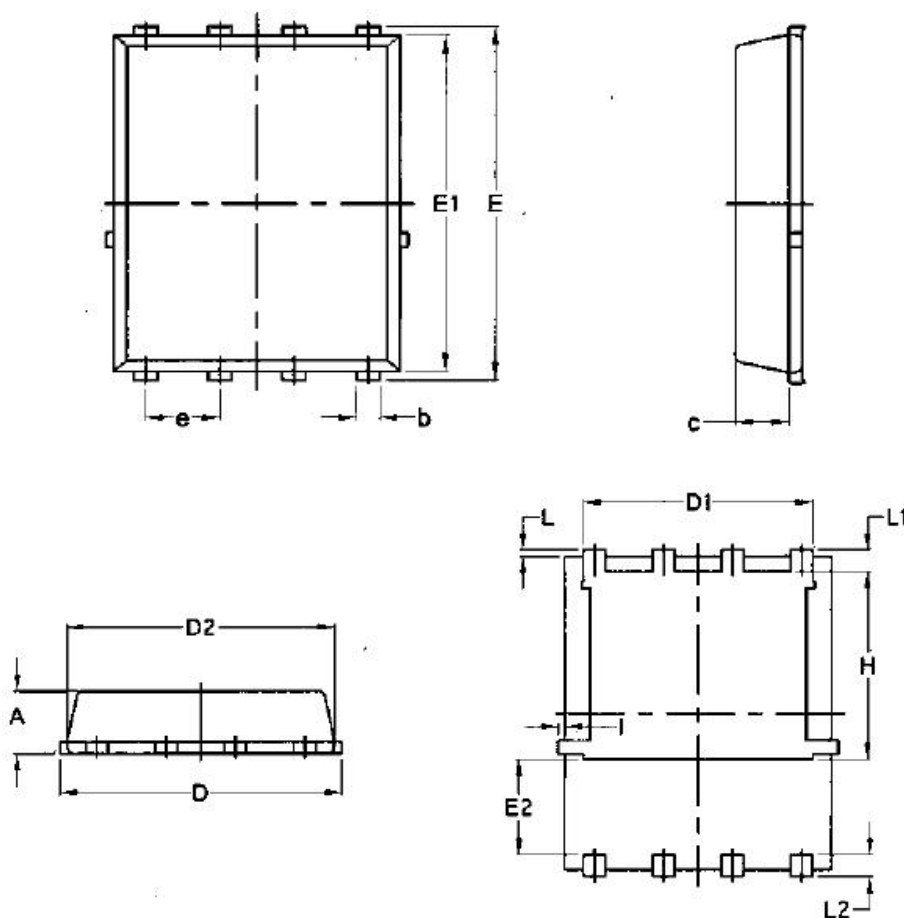


Figure 9, Safe operation area $T_C=25\text{ }^{\circ}\text{C}$

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