

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	0.6mΩ@10V	456A
	0.74mΩ@4.5V	

Feature

- Super Trench technology
- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$

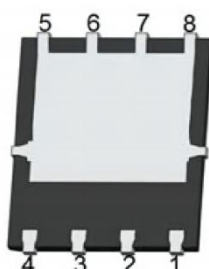
Application

- DC-DC converter
- Ideal for high-frequency switching and synchronous rectification

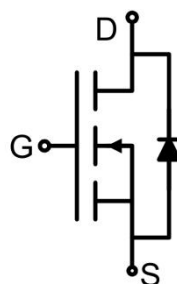
Package



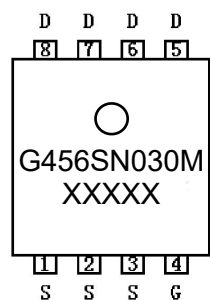
PDFN5*6-8L



Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	456	A
Continuous Drain Current (T _c =100°C)	I _D (100°C)	289	A
Pulsed Drain Current	I _{DM}	1824	A
Power Dissipation	P _D	200	W
Single Pulse Avalanche Energy ¹⁾	E _{AS}	1524	mJ
Thermal Resistance, Junction-to-Case	R _{θJC}	0.63	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_c=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	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.6	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		0.48	0.60	mΩ
		V _{GS} =4.5V, I _D =20A		0.60	0.74	
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f =1MHz		9700		pF
Output Capacitance	C _{oss}			2600		
Reverse Transfer Capacitance	C _{rss}			98		
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =20A		145		nC
Gate-Source Charge	Q _{gs}			22.5		
Gate-Drain Charge	Q _{gd}			24		
Turn-on delay time	t _{d(on)}	V _{DD} =15V, V _{GS} =10V, I _D =20A R _G =1.6Ω		10		nS
Turn-on rise time	t _r			2.5		
Turn-off delay time	t _{d(off)}			95		
Turn-off fall time	t _f			18		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				456	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse recover time	T _{rr}	I _F =40A, di/dt=100A/us, T _J =25℃		65		nS
Reverse recovery charge	Q _{rr}			68		nC

Notes:

1) EAS condition : T_J=25°C, V_{DD}=15V, V_G=10V, L=0.3mH, R_G=25Ω.

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

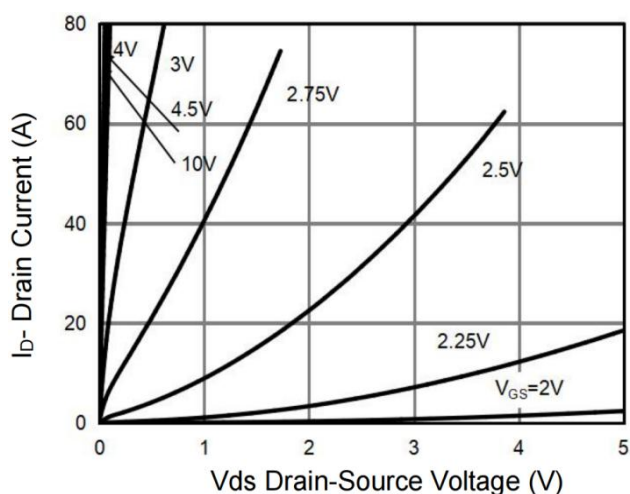


Figure 1 Output Characteristics

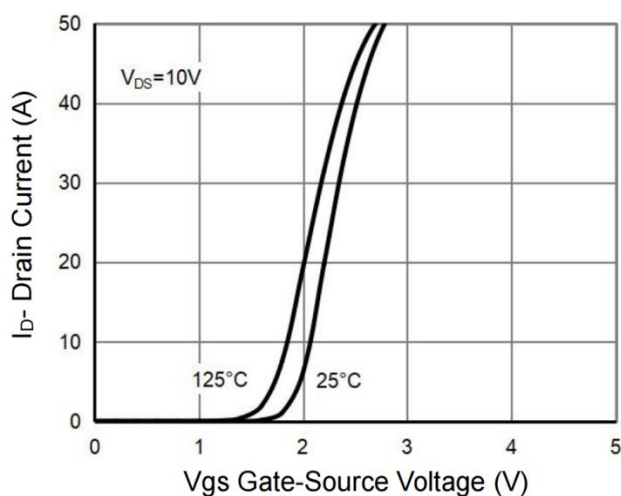


Figure 2 Transfer Characteristics

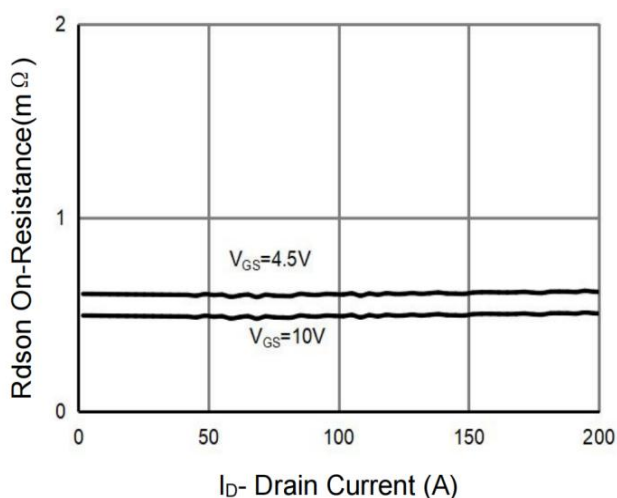


Figure 3 Rdson- Drain Current

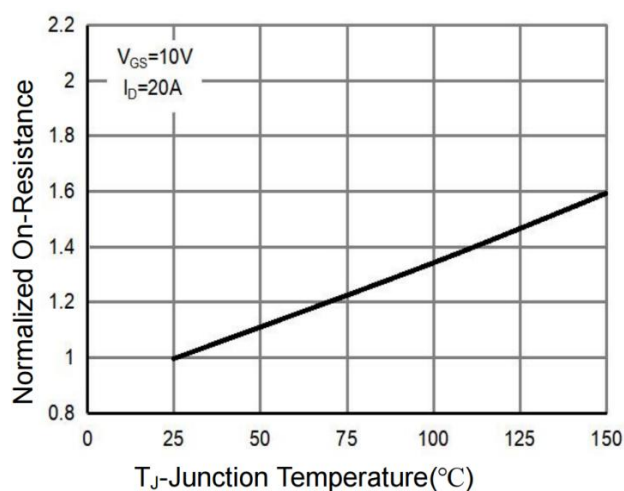


Figure 4 Rdson-Junction Temperature

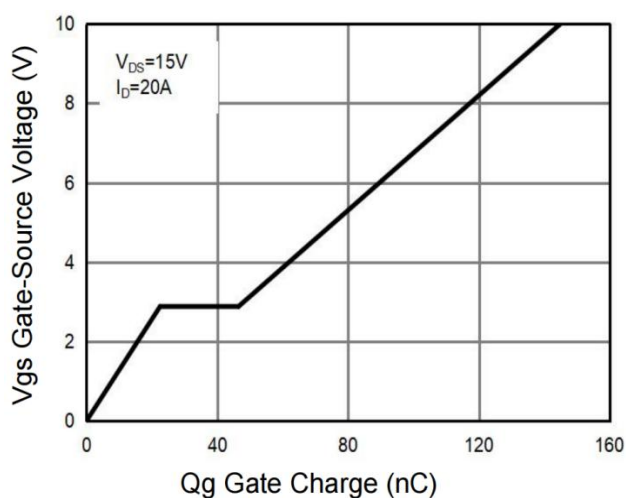


Figure 5 Gate Charge

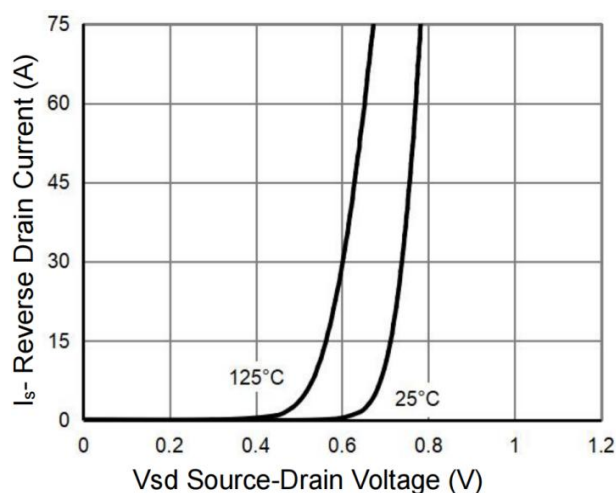


Figure 6 Source- Drain Diode Forward

Typical Characteristics

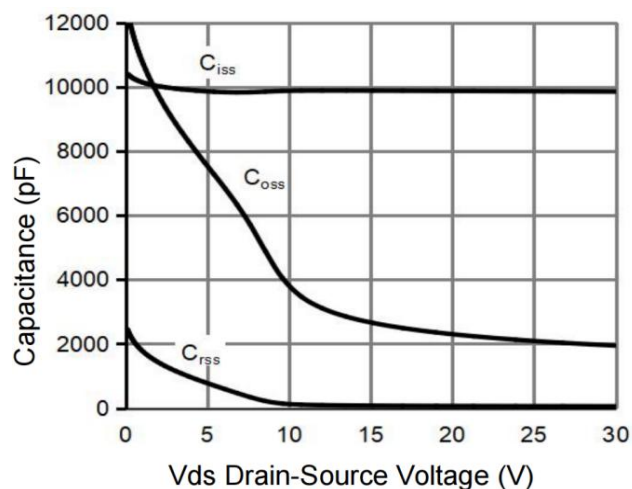


Figure 7 Capacitance vs Vds

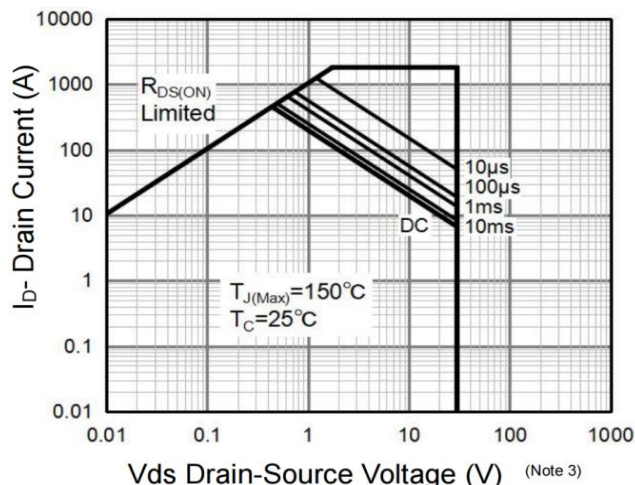


Figure 8 Safe Operation Area

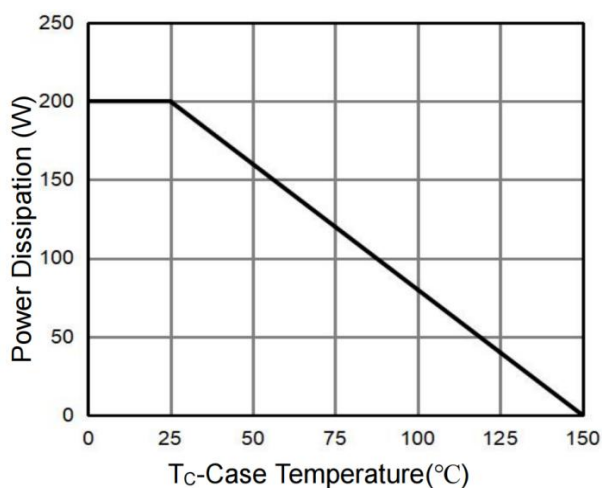


Figure 9 Power De-rating

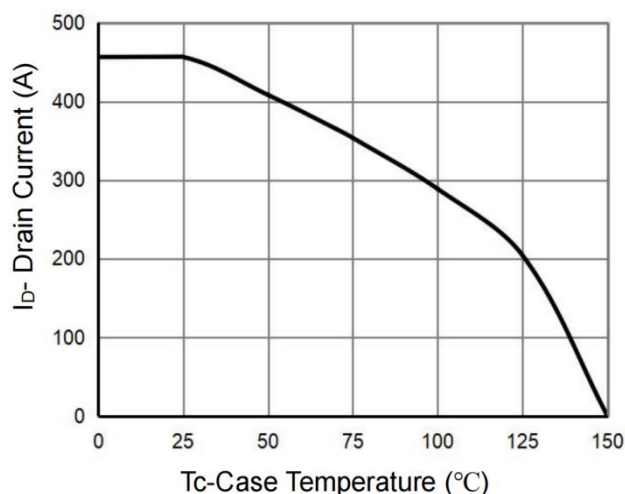


Figure 10 Current De-rating

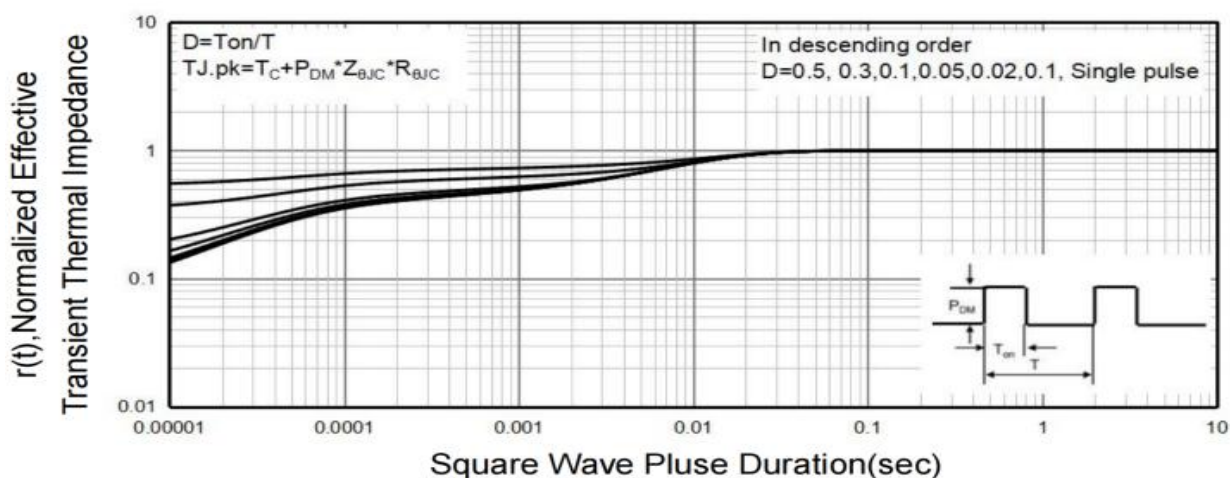
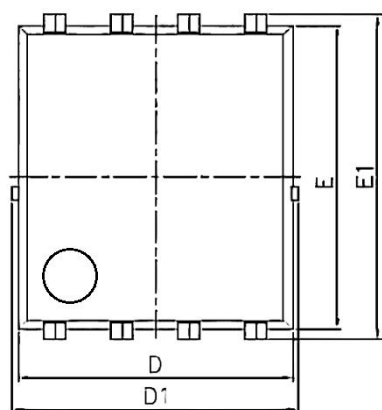
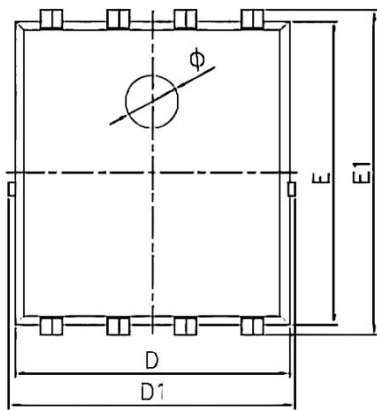


Figure 11 Normalized Maximum Transient Thermal Impedance

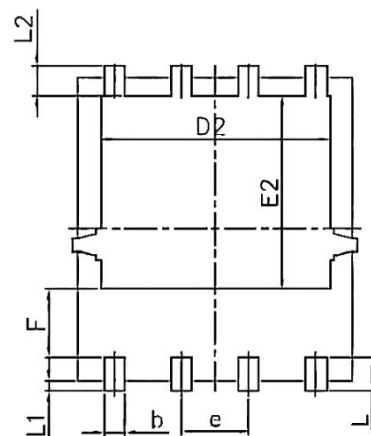
PDFN5*6-8L Package Information



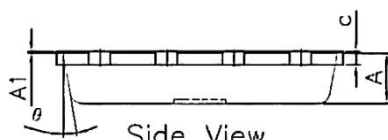
Top View (1)



Top View (2)



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.050	0.035	0.041
A1	0.000	0.050	0.000	0.002
b	0.310	0.510	0.012	0.020
c	0.200	0.300	0.008	0.012
D	5.000	5.300	0.197	0.209
D1	5.000	5.500	0.197	0.217
D2	3.700	4.450	0.146	0.175
e	1.270 BSC.		0.050 BSC.	
E	5.700	6.000	0.224	0.236
E1	6.000	6.300	0.236	0.248
E2	3.560	3.770	0.140	0.148
F	1.180	1.380	0.046	0.054
L	0.510	0.750	0.020	0.030
L1	0.150	0.250	0.006	0.010
L2	0.450	0.710	0.018	0.028
φ	0.900	1.100	0.035	0.043
θ	8°	12°	8°	12°