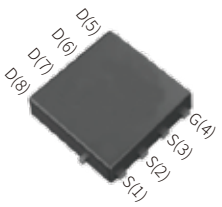
FEATURES

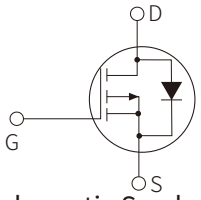
- Surface-mounted package
- Advanced trench cell design



PDFN5×6-8L

APPLICATION

- LCD TV appliances
- LCDM appliances
- High power inverter system



Schematic Symbol

APPROVALS

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

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage T_C=25°C		V_{DS}	-100	V
Pulsed Source Current T_C=25°C,V_{GS}=-10V		I_{DM}*,**	-96	A
Drain Current V_{GS}=-10V	T_C=25°C	I_D*	-50	A
	T_C=100°C		-22	A
Gate-Source Voltage T_C=25°C		V_{GS}	±20	V
Total Power Dissipation T_C=25°C		P_{tot}	62.5	W
Diode Forward Current T_C=25°C		I_S	-50	A
Junction Temperature		T_J	-55 to 150	°C
Storage Temperature		T_{STG}	-55 to 150	°C
Single Pulsed Avalanche Energy V_{DD}= -50V , L=1.0mH		E_{AS}*	242	mJ
Thermal Resistance- Junction to Ambient		$R_{\theta JA}$*	42	°C/W
Thermal Resistance- Junction to Case		$R_{\theta JC}$*	1.3	°C/W

Notes:
* Surface Mounted on 1 in^2 pad area, t ≤10 sec
** Pulse width≤300 us, duty cycle≤ 2 %

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-100			V
Drain Leakage Current	I_{DSS}	V_{DS}=-50V,V_{GS}=0V			-1	μA
		V_{DS}=-50V,V_{GS}=0V,T_J=85 °C			-30	μA
Gate 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	V
On-State Resistance	$R_{DS(on)}$[a]	V_{GS}=-10V,I_{DS}=-10A		47	55	mΩ
		V_{GS}=-4.5V,I_{DS}=-5A		51	60	mΩ
Gate Charge Characteristics[b]						
Total Gate Charge	Q_g	V_{DS}=-50V,V_{GS}=-10V,I_{DS}=-10A		73		nC
Gate- Source Charge	Q_{gs}			17		nC
Gate- Drain Charge	Q_{gd}			9.1		nC
Switching Characteristics						
Turn–On Delay Time	$t_{d(on)}$	V_{DS} = - 50 V, V_{GEN} = - 10 V, R_G = 4.5 Ω, R_L = 5Ω, I_{DS} = -10A		49		nS
Turn–On Rise Time	t_r			71		nS
Turn–Off Delay Time	$t_{d(off)}$			555		nS
Turn–Off Fall Time	t_f			187		nS
Input Capacitance	C_{iss}	V_{DS}=-50V,V_{GS}=0V Frequency = 1 MHz		4507		pF
Output Capacitance	C_{oss}			97		pF
Reverse Transfer Capacitance	C_{rss}			15		pF
Diode Characteristics						
Diode Forward Voltage	V_{SD}[a]	I_{SD} = -10A, V_{GS} =0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_{DS} =-10A, dI_{SD} / dt=100A/μs		32		nS
Reverse Recovery Charge	Q_{rr}			49		nC

Notes:
a: Pulse test; pulse width ≤300 μs, duty cycle ≤ 2%
b: Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

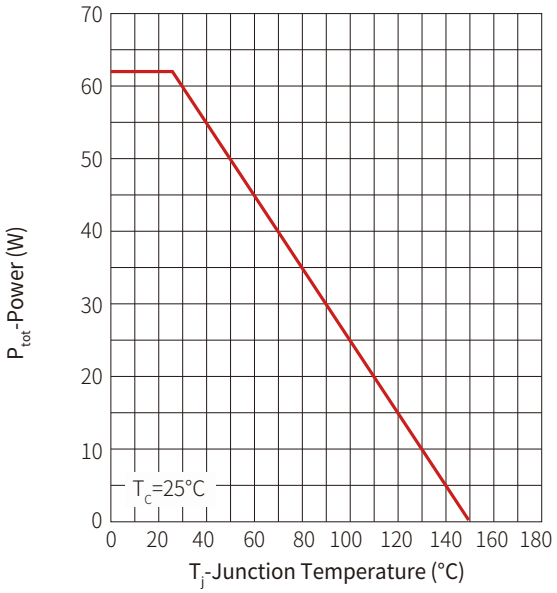


Figure2: Current Capability

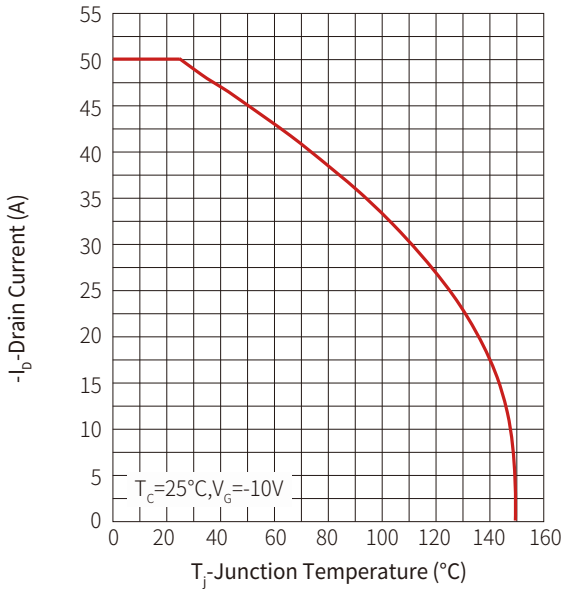


Figure3: Safe Operation Area

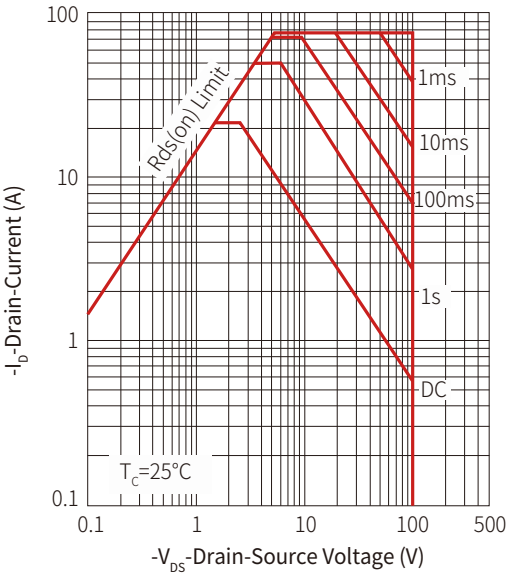


Figure 4: Transient Thermal Impedance

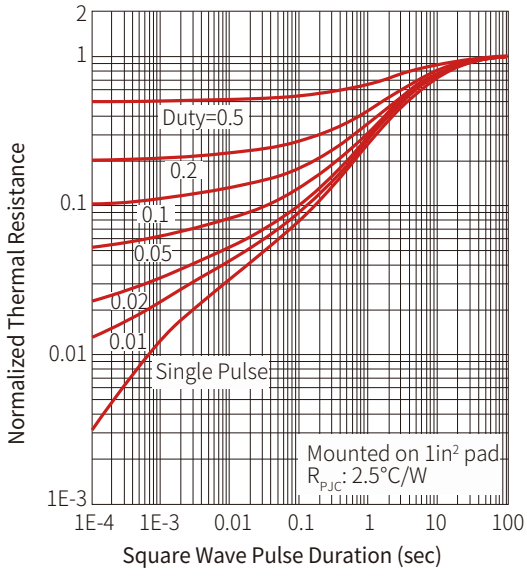


Figure 5:Output Characteristics

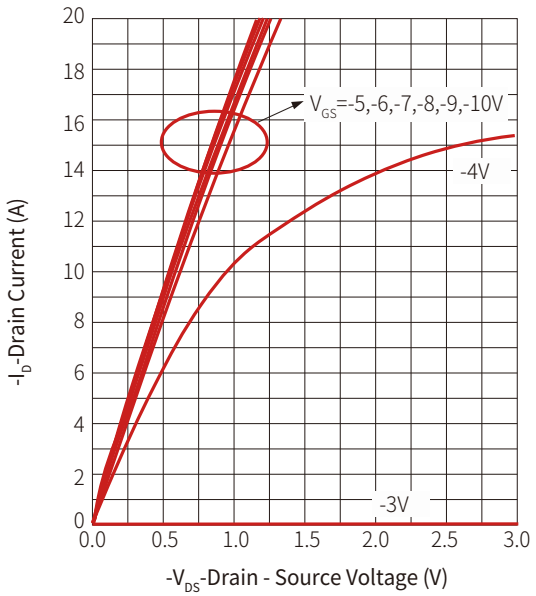


Figure 6: Drain-Source On Resistance

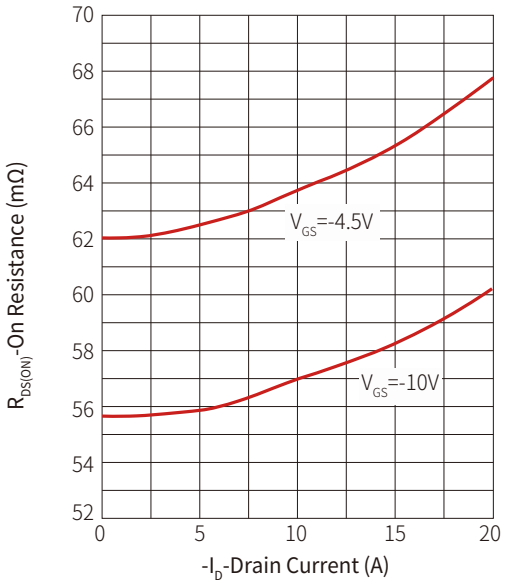


Figure 7:Transfer Characteristics

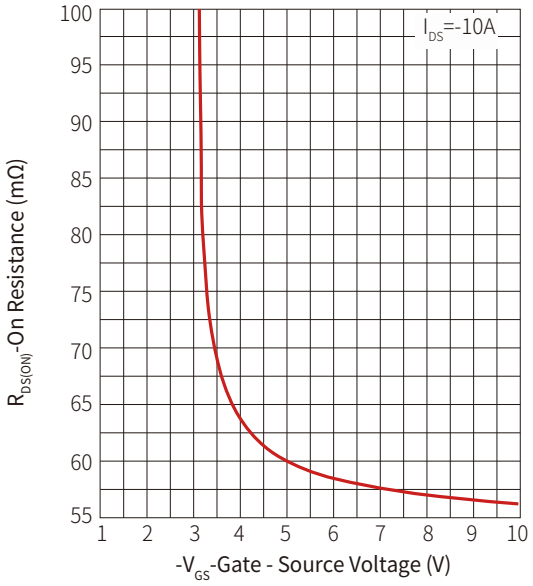


Figure 8: Normalized Threshold Voltage

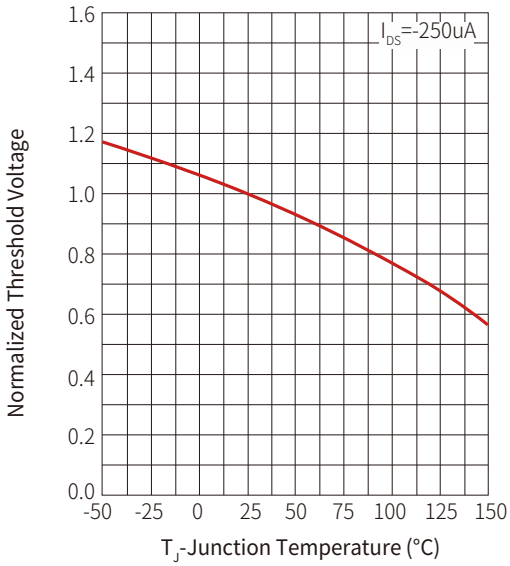


Figure 9:Normalized On Resistance

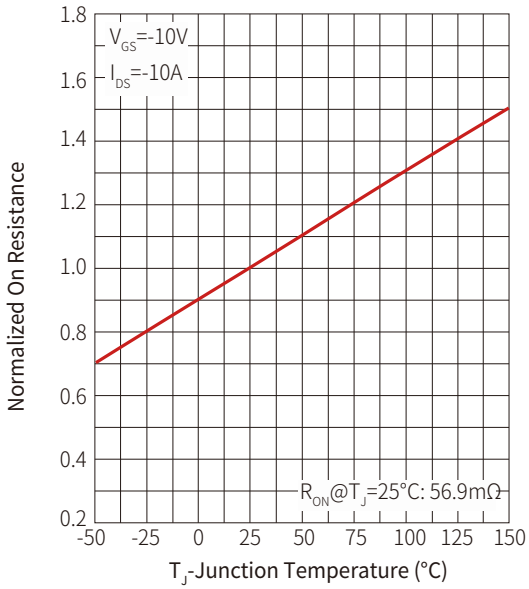


Figure 10: Diode Forward Current

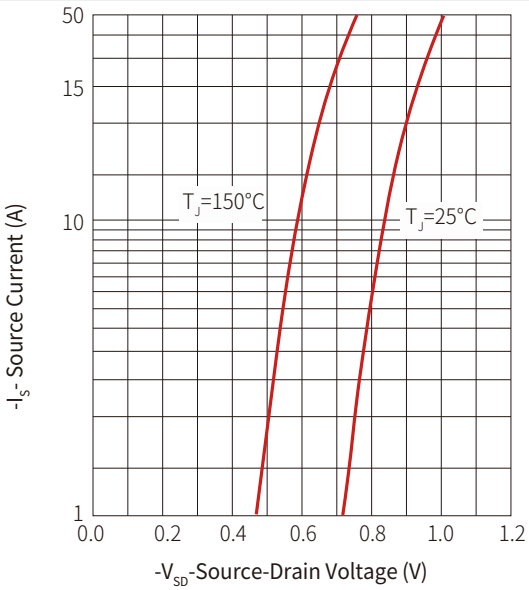


Figure 11:Capacitance

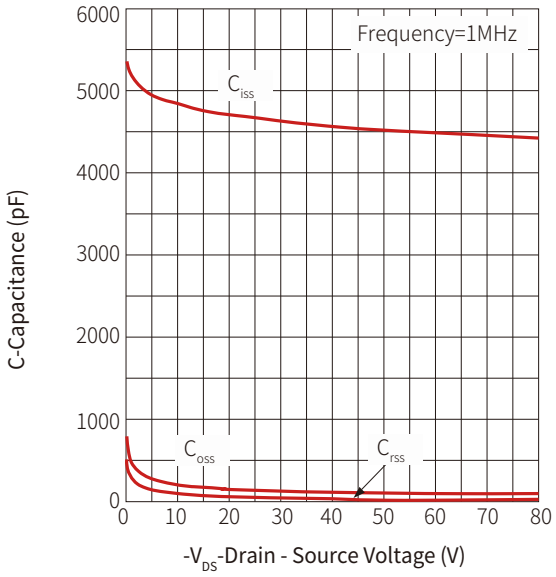
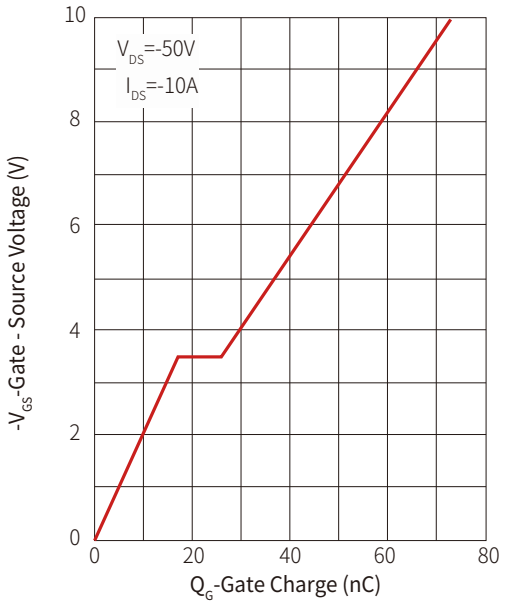
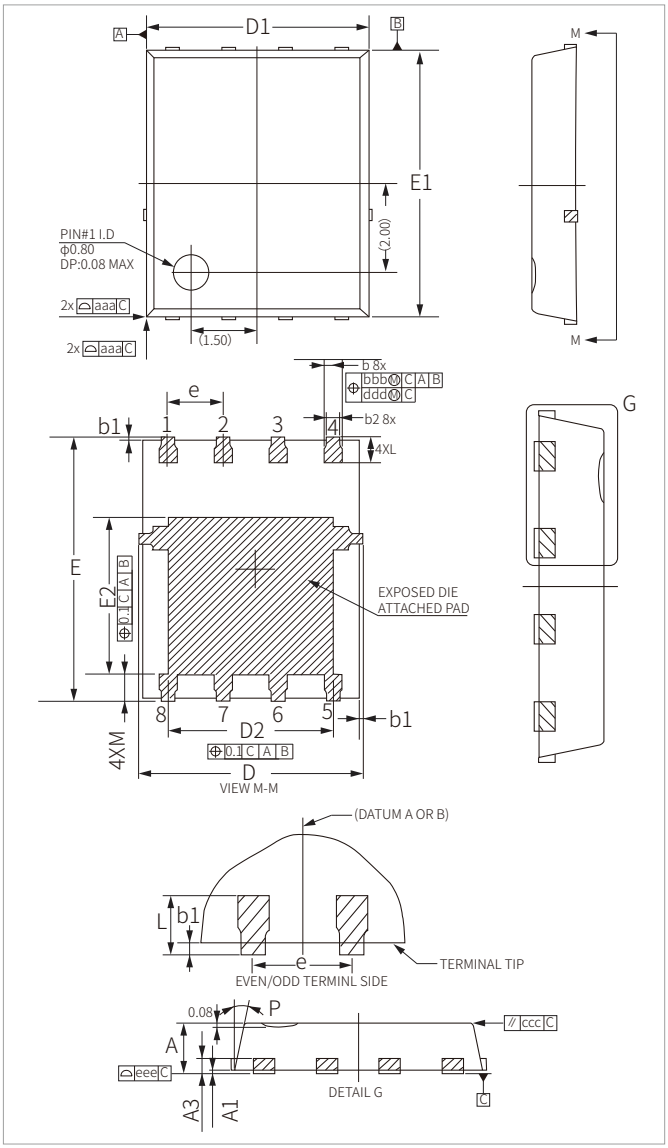


Figure 12: Gate Charge



PDFN5×6-8L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.17	0.035	0.046
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	Marking	QTY/Reel	Reel Size
SPM50P10G	PDFN5×6-8L	50P10 XXXX	5000PCS	13”

Headquarters
No.3387 Shendu Road
Pujiang I&E Park
Minhang Shanghai China
201000

Hotline
400-021-5756

Web
Https://www.semiware.com

Sales Center
Tel: 86-21-3463-7458
Email: sales18@semiware.com

Customer Service
Tel: 86-21-5484-1001
Email: sales17@semiware.com

Technical Support
Tel: 86-21-3463-7654
Email: fae01@semiware.com

Complaint & Suggestions
Tel: 86-21-3463-7172
Ext: 8868
Email: cs03@semiware.com

By QR Code
Website
Wechat

To find your local partner within Semiware' s global website: www.semiware.com