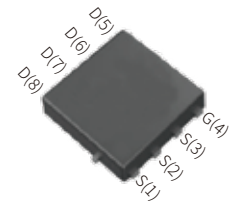


FEATURES

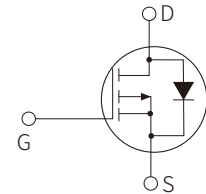
- | Surface-mounted package
- | Advanced trench cell design



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

Notes:

* Surface Mounted on 1 in² pad area, $t \leq 10$ sec

** Pulse width ≤ 300 us, duty cycle $\leq 2\%$

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

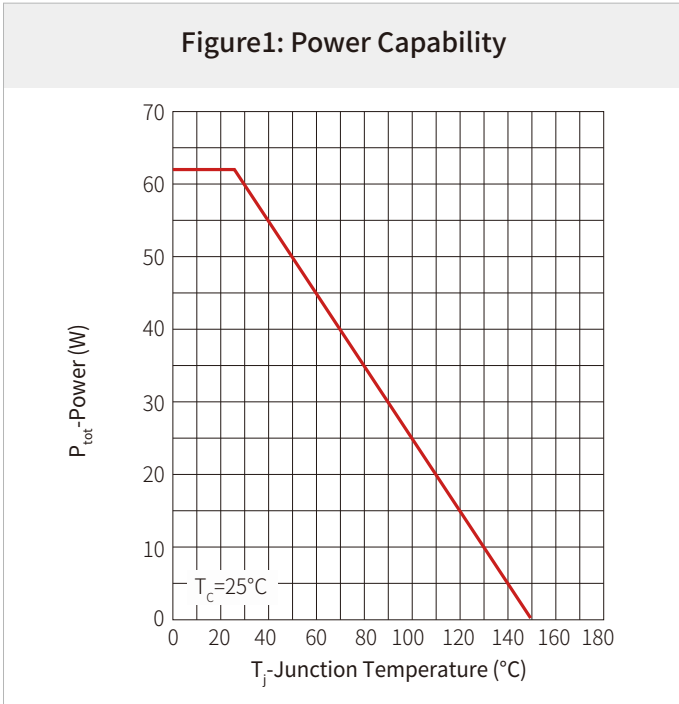


Figure2: Current Capability

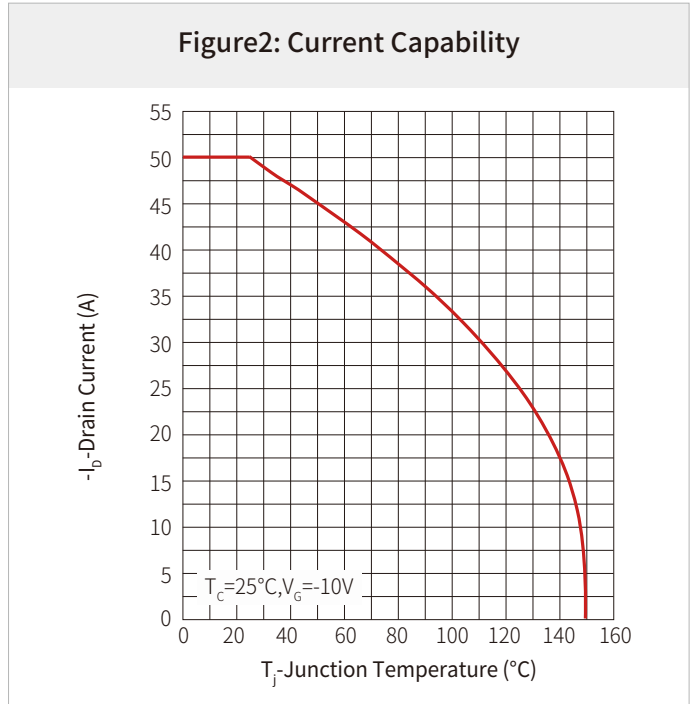


Figure3: Safe Operation Area

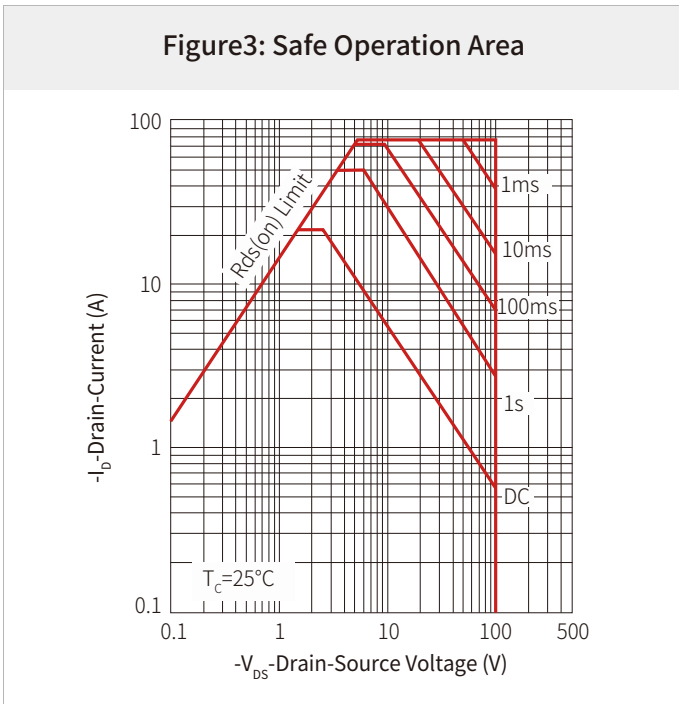


Figure 4: Transient Thermal Impedance

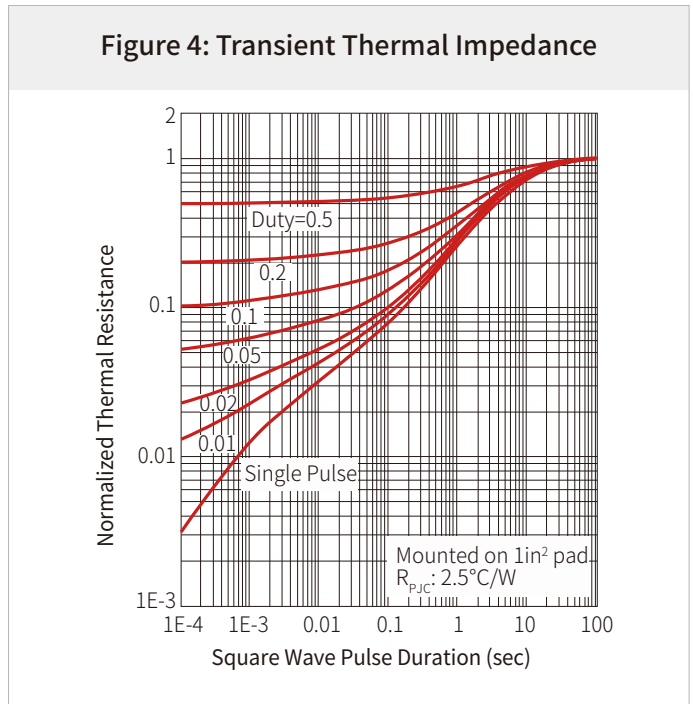


Figure 5: Output Characteristics

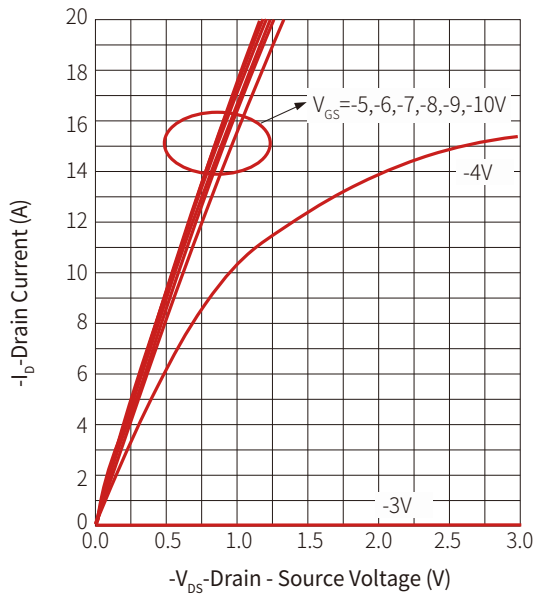


Figure 6: Drain-Source On Resistance

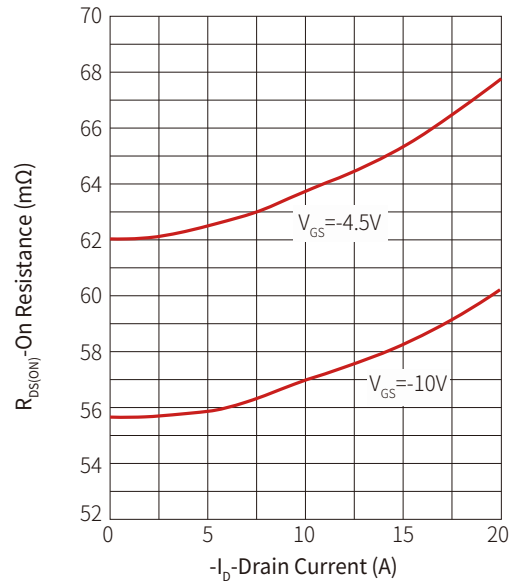


Figure 7: Transfer Characteristics

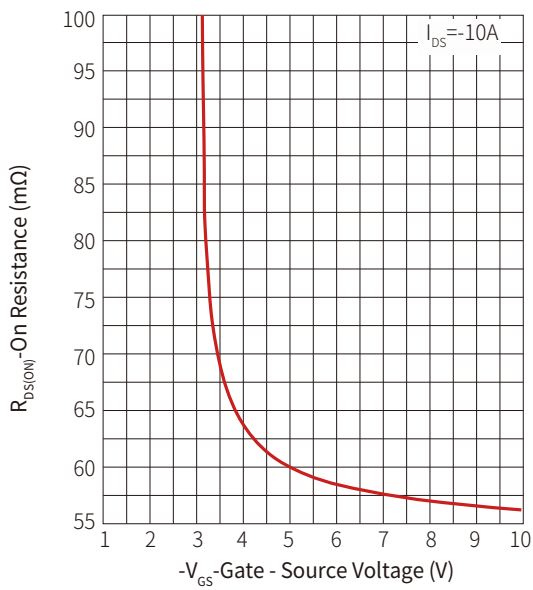


Figure 8: Normalized Threshold Voltage

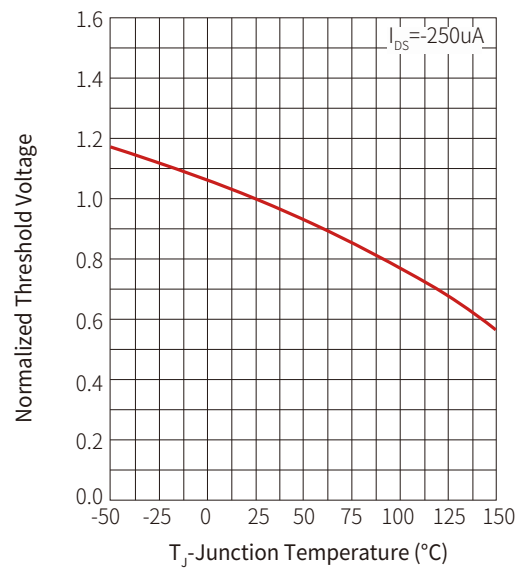


Figure 9: Normalized On Resistance

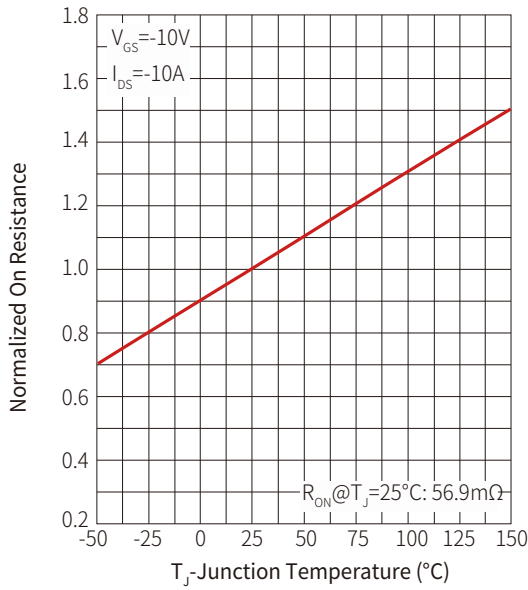


Figure 10: Diode Forward Current

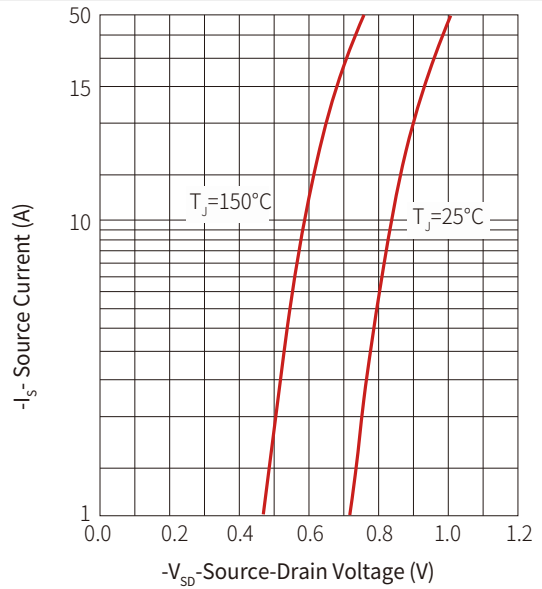


Figure 11: Capacitance

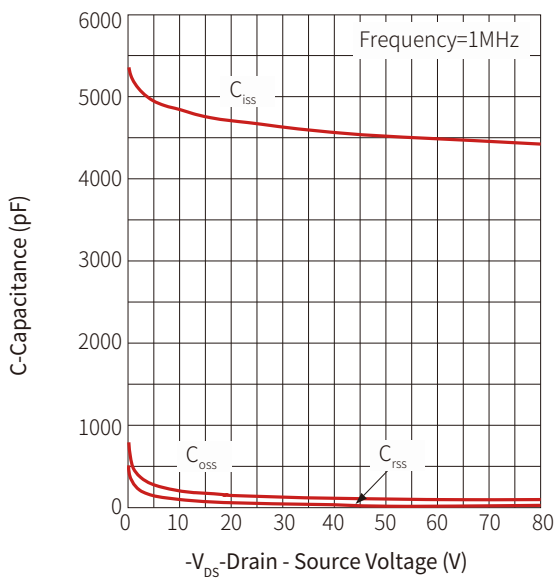
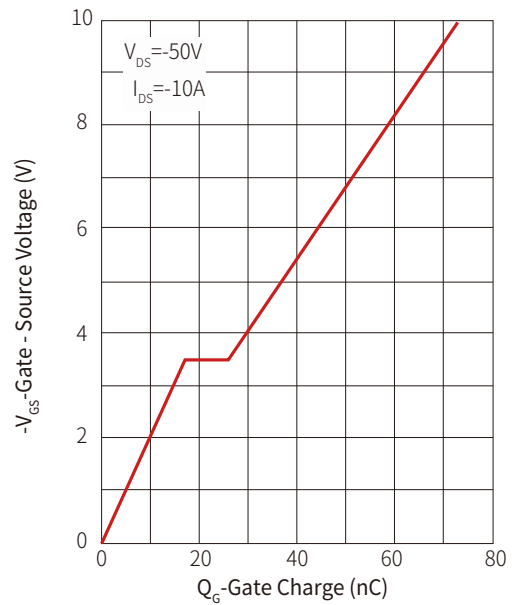
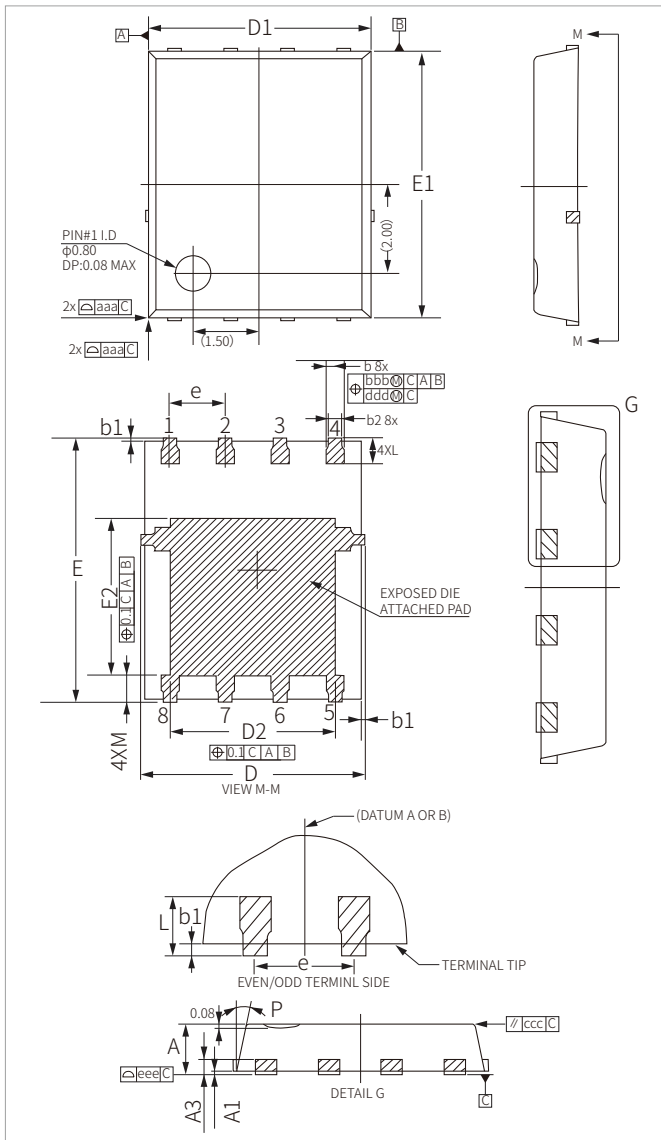


Figure 12: Gate Charge




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"

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