

FEATURES

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

APPLICATION

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



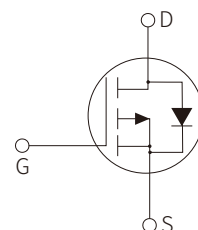
PDFN3×3-8L



Marking

APPROVALS

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



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage $T_c=25^{\circ}\text{C}$		V_{DS}	-100	V
Drain Current (Pulsed) $T_c=25^{\circ}\text{C}$ $V_{GS}=-10\text{V}$		I_{DM}^{***}	-76	A
Drain Current (DC)	$T_c=25^{\circ}\text{C}$ $V_{GS}=-10\text{V}$	I_D^*	-30	A
	$T_c=100^{\circ}\text{C}$ $V_{GS}=-10\text{V}$		-18	A
Gate-Source Voltage $T_c=25^{\circ}\text{C}$		V_{GS}	± 20	V
Drain power dissipation $T_c=25^{\circ}\text{C}$		P_{tot}	50	W
Continuous-Source Current $T_c=25^{\circ}\text{C}$		I_S	-30	A
Junction Temperature		T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 ~ +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		$R_{\theta JA}^*$	37	$^{\circ}\text{C/W}$
Thermal Resistance- Junction to Case		$R_{\theta JC}^*$	1.2	$^{\circ}\text{C/W}$

Notes:

- * Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$
- ** Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=-250\mu A$	-100			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1		-3	V
Drain Leakage Current	I_{DSS}	$V_{DS}=-50V, V_{GS}=0V$			-1	μA
		$V_{DS}=-50V, V_{GS}=0V, T_J=85^{\circ}C$			-30	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=-10V, I_{DS}=-10A$		80	88	m Ω
		$V_{GS}=-4.5V, I_{DS}=-5A$		90	98	m Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$I_{SD}=-10A, V_{GS}=0V$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_{DS}=-10A$ $dI_{SD}/dt=100A/\mu s$		32		nS
Reverse Recovery Charge	Q_{rr}			49		nC
Dynamic Characteristics ^b						
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-50V,$ Frequency = 1 MHz		1142		pF
Output capacitance	C_{oss}			67		pF
Reverse transfer capacitance	C_{rss}			81		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=-50V, V_{GEN}=-10V$ $R_G=4.5\Omega, R_L=5\Omega,$ $I_{DS}=-10A$		20		nS
Turn-on Rise Time	t_r			11		nS
Turn-Off Delay Time	$t_{d(off)}$			100		nS
Turn-Off Fall Time	t_f			38		nS
Gate Charge Characteristics ^b						
Total Gate Charge	Q_g	$V_{DS}=-50V, V_{GS}=-10V, I_{DS}=-10A$		55		nC
Gate-Source Charge	Q_{gs}			10		nC
Gate-Drain Charge	Q_{gd}			9.4		nC

Notes:

a : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

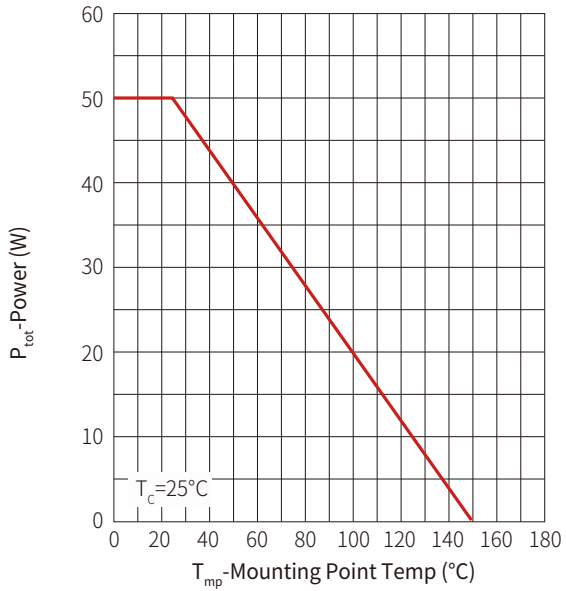


Figure2: Current Capability

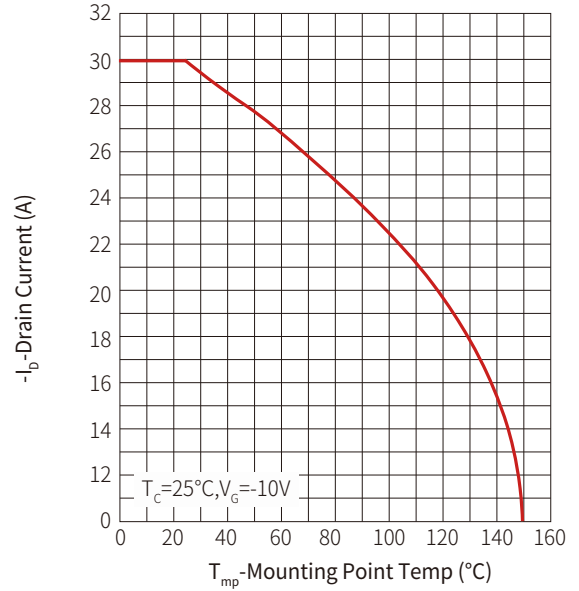


Figure3: Safe operating Area

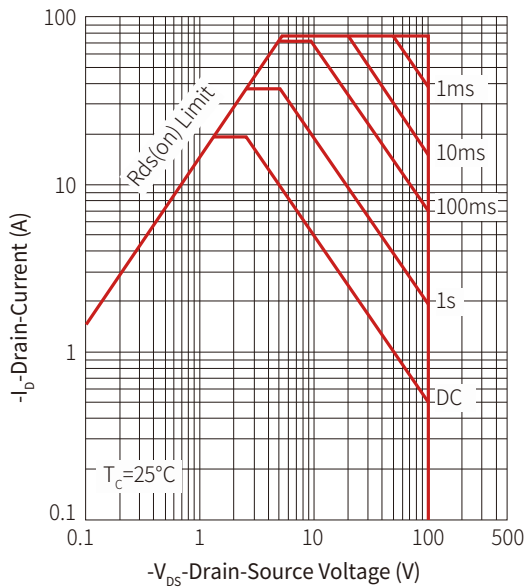


Figure 4: Transient Thermal Impedance

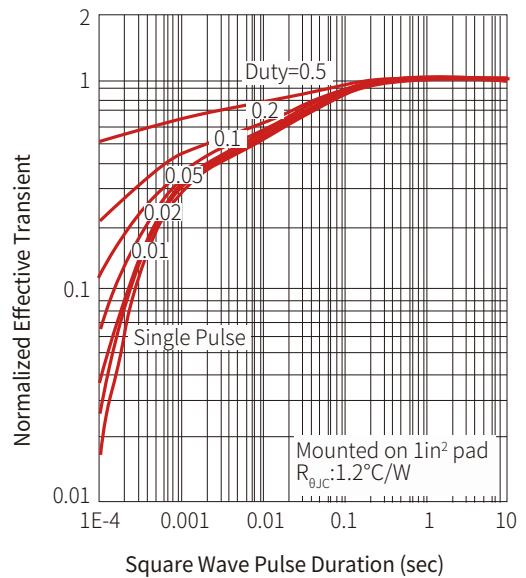


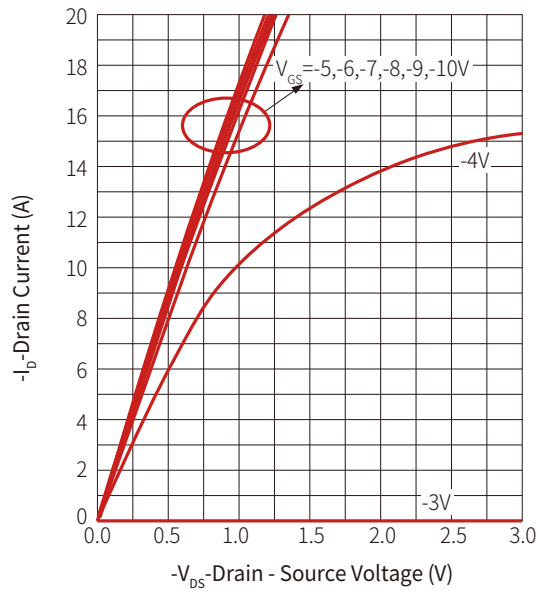
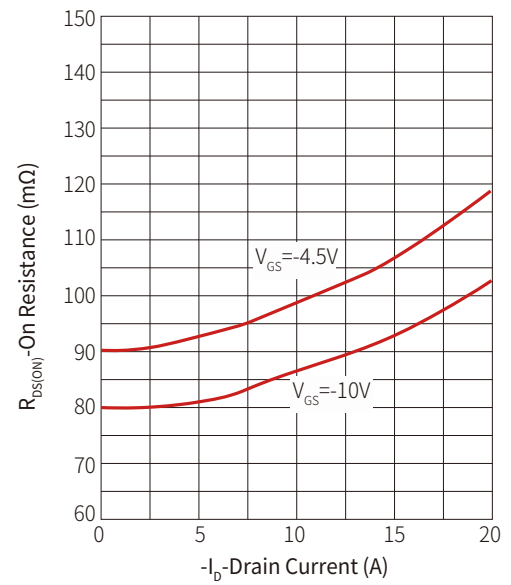
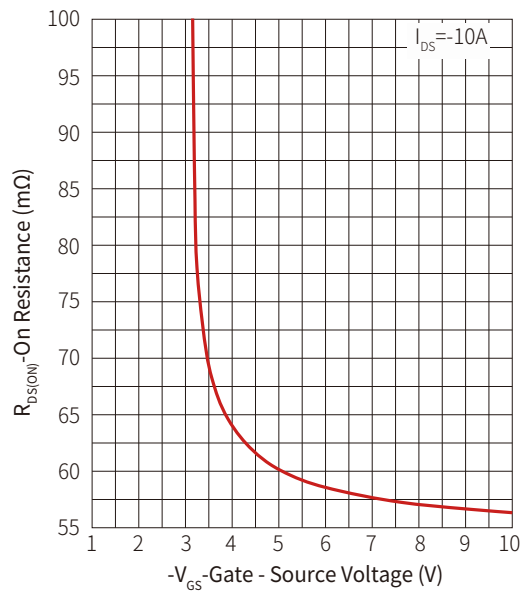
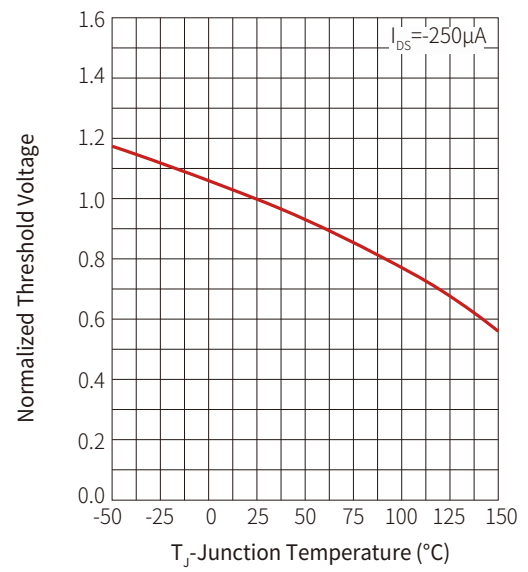
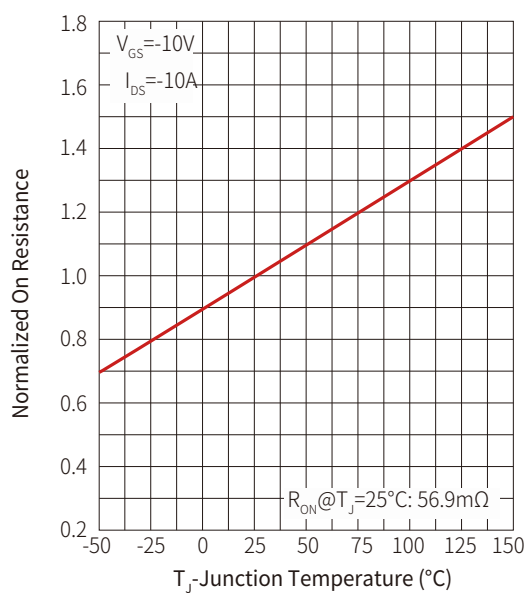
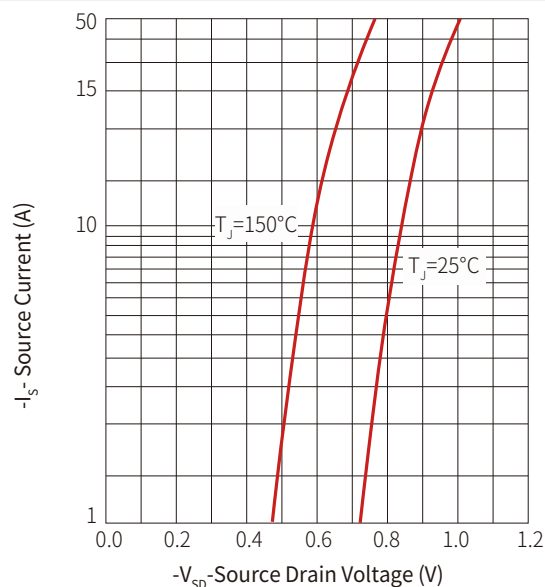
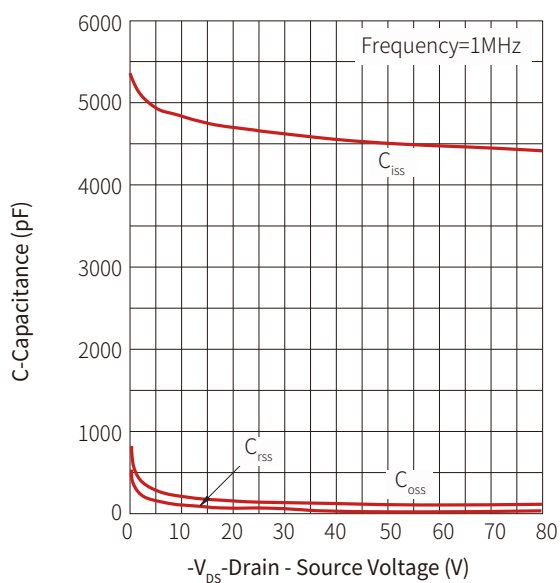
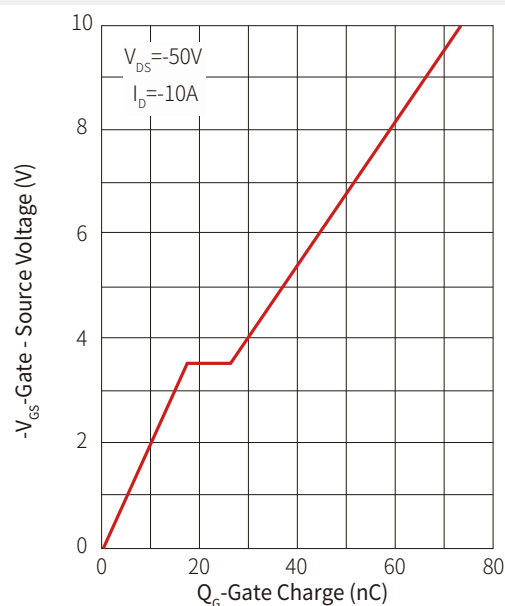
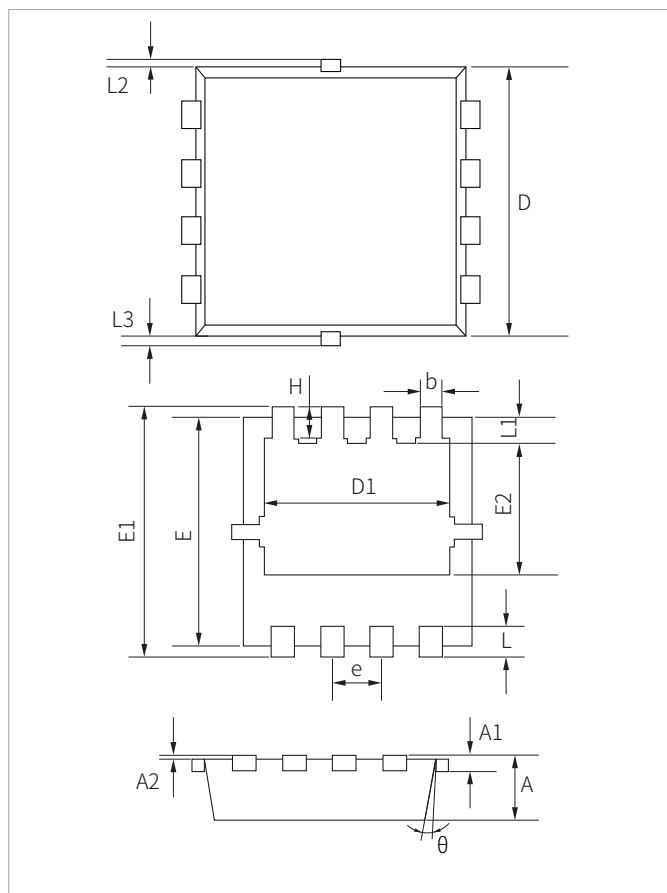
Figure 5: Output Characteristics

Figure 6: 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


PDFN3x3-8L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152REF		0.006REF	
A2	0~0.05		0~0.002	
D	2.900	3.300	0.114	0.130
D1	2.250	2.650	0.089	0.104
E	2.900	3.300	0.114	0.130
E1	3.150	3.550	0.124	0.140
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM30P10Q	PDFN3x3-8L	5000PCS	13"

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