

30V N-Channel Mosfet

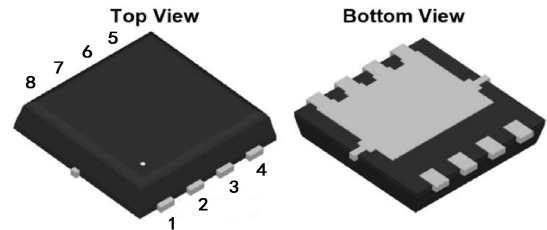
FEATURES

- $R_{DS(ON)} \leq 9.5m\Omega$ (7m Ω Typ.)
@ $V_{GS}=10V$
- $R_{DS(ON)} \leq 13.5m\Omega$ (9m Ω Typ.)
@ $V_{GS}=4.5V$

APPLICATIONS

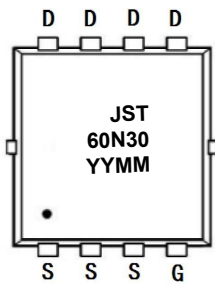
- Consumer electronic power supply
- Motor control
- Isolated DC/DC convertor

PDFN3.3*3.3-8L



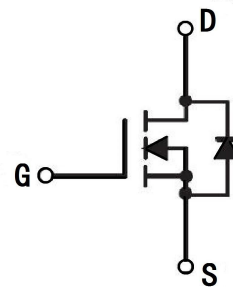
- | | | | |
|------|------|------|------|
| 1: S | 3: S | 5: D | 7: D |
| 2: S | 4: G | 6: D | 8: D |

MARKING



YYMM:Date Code(year&month)

N-CHANNEL MOSFET



MAXIMUM RATINGS ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current <small>note1</small>	54	A
I_{DM}	Pulsed Drain Current <small>note1 note2 note3</small>	200	A
P_{tot}	Total Power Dissipation <small>note1</small>	41	W
E_{AS}	Single Pulsed Avalanche Energy	35	mJ
$R_{\theta JC}$	Thermal Resistance, Junction to Case <small>note1</small>	3.13	$^\circ C/W$
T_J	Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to +150	$^\circ C$

MOSFET ELECTRICAL CHARACTERISTICS Tc=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 30V,$ $V_{GS} = 0V, T_J = 25^\circ C$	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.7	3.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^{note4}	$V_{GS} = 10V, I_D = 12A$	-	7	9.5	m Ω
		$V_{GS} = 4.5V, I_D = 10A$	-	9	13.5	
Dynamic Characteristics ^{note5}						
C_{iss}	Input Capacitance	$V_{DS} = 15V, V_{GS} = 0V,$ $f = 1.0MHz$	-	1070	-	pF
C_{oss}	Output Capacitance		-	165	-	pF
C_{rss}	Reverse Transfer Capacitance		-	118	-	pF
Q_g	Total Gate Charge	$V_{DS} = 15V, I_D = 30A,$ $V_{GS} = 10V$	-	30.1	-	nC
Q_{gs}	Gate-Source Charge		-	4.5	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	1.8	-	nC
Switching Characteristics ^{note5}						
$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = 10V, V_{DS} = 30V,$ $R_G = 3\Omega, R_L = 1.5\Omega$	-	15	-	ns
t_r	Turn-On Rise Time		-	3.5	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	31	-	ns
t_f	Turn-Off Fall Time		-	5	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_{SD} = 1A,$ $T_J = 25^\circ C$	-	0.71	1.0	V
t_{rr}	Reverse Recovery Time	$V_{GS} = 0V, I_S = 30A,$ $di/dt = 100A/\mu s$	-	12	-	ns
Q_{rr}	Reverse Recovery Charge		-	10.5	-	nC

- Notes: 1. Surface Mounted on 1 in² pad area, t_s ≤ 10 sec
2. Pulse width ≤ 10 μs , Duty Cycle ≤ 1%.
3. limited by bonding wire
4. Pulse test: pulse width ≤ 300 μs , Duty Cycle ≤ 2%.
5. Guaranteed by design, not subject to production testing

TYPICAL PERFORMANCE CHARACTERISTICS

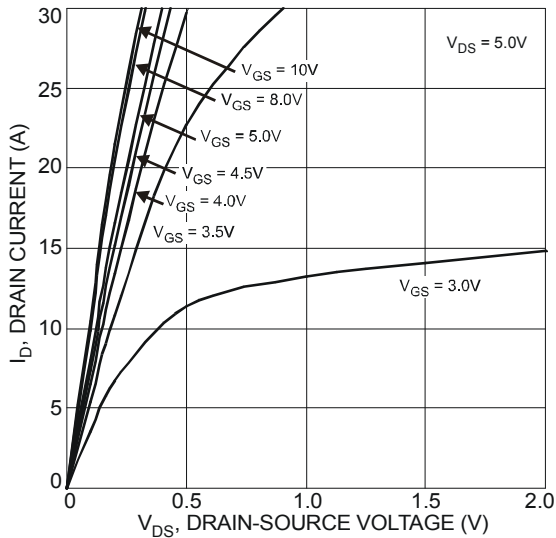


Fig. 1 Typical Output Characteristic

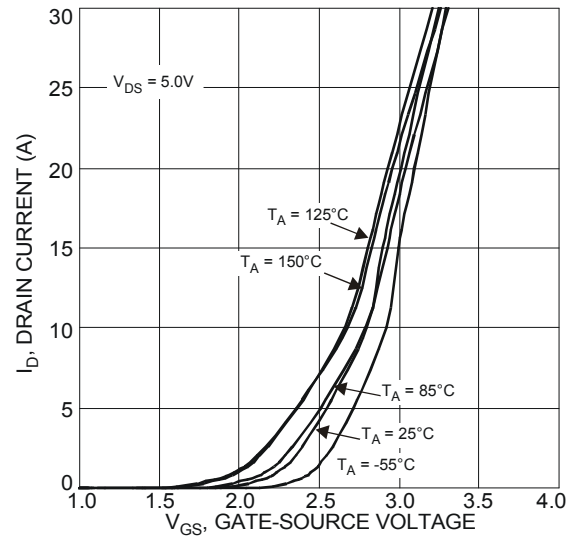


Fig. 2 Typical Transfer Characteristics

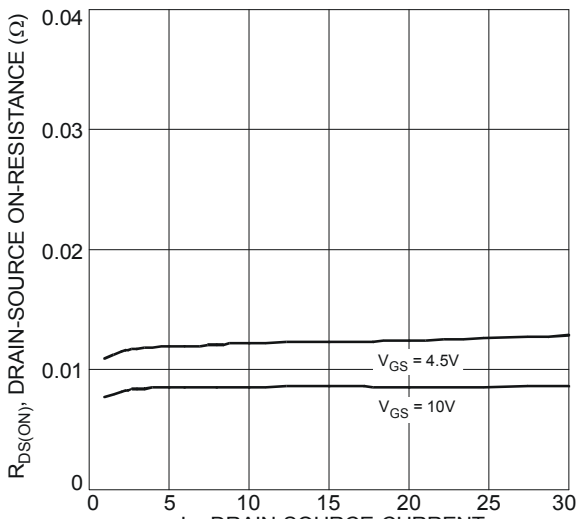


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

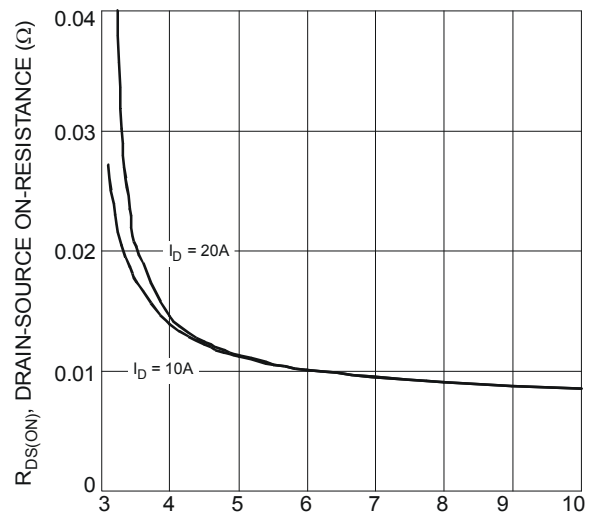


Fig. 4 Typical On-Resistance vs. Gate Voltage

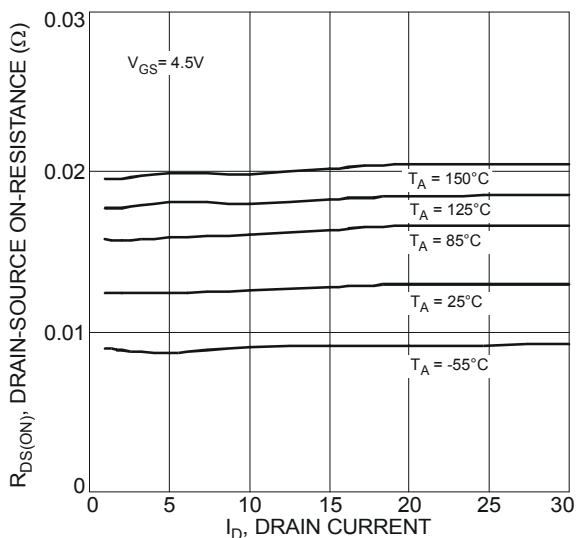


Fig. 5 Typical On-Resistance vs. Drain Current and Temperature

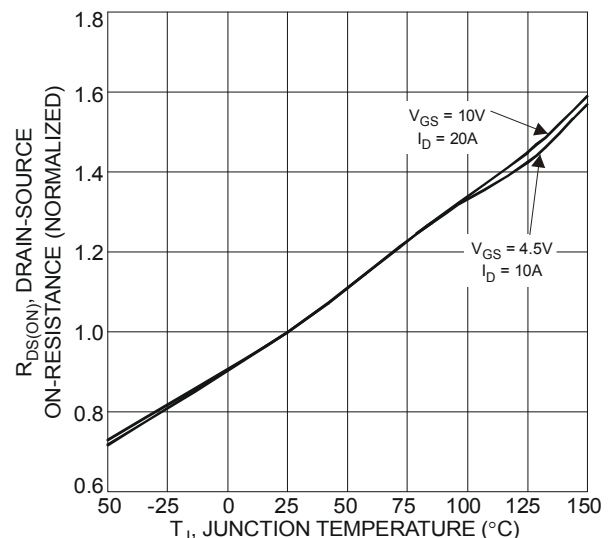


Fig. 6 On-Resistance Variation with Temperature

TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

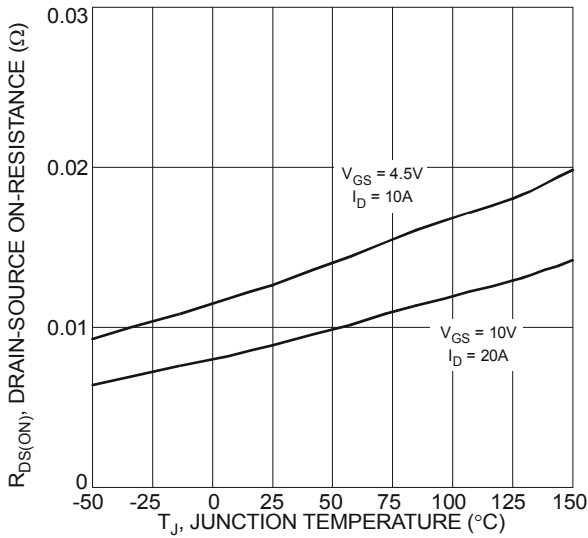


Fig. 7 On-Resistance Variation with Temperature

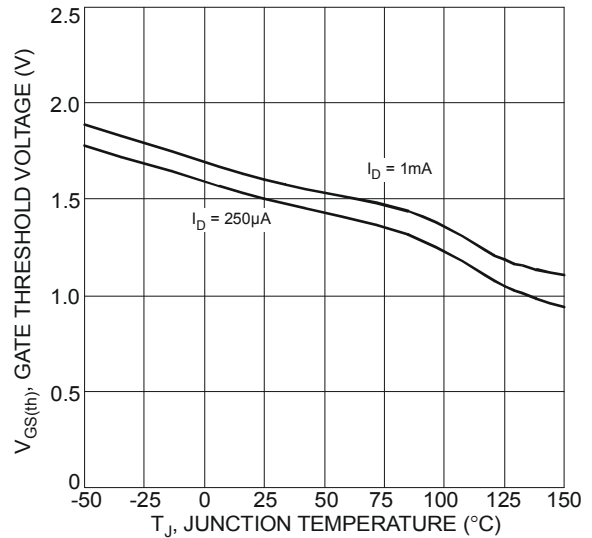


Fig. 8 Gate Threshold Variation vs. Ambient Temperature

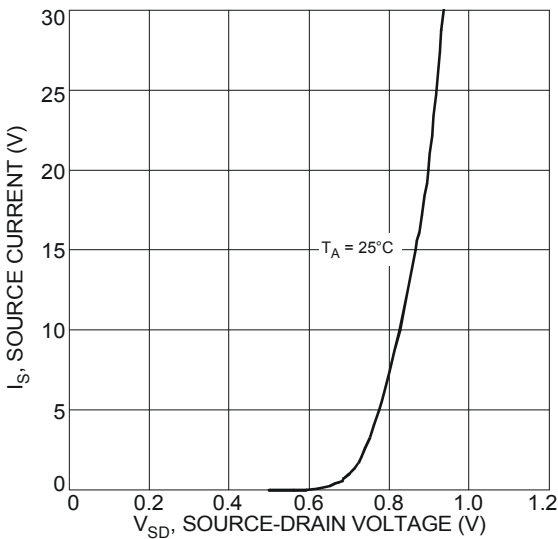


Fig.9 Diode Forward Voltage vs. Current

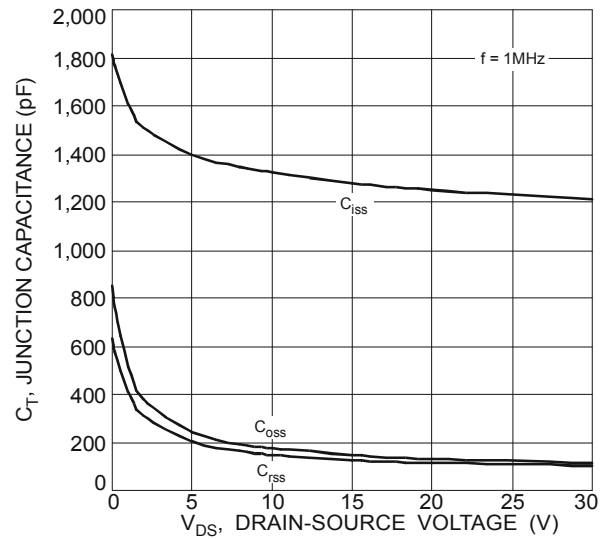


Fig.10 Typical Junction Capacitance

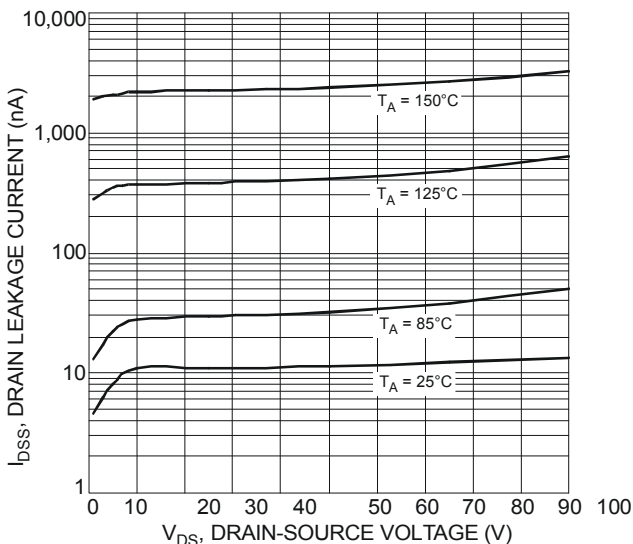


Fig. 11 Typical Drain-Source Leakage Current vs. Voltage

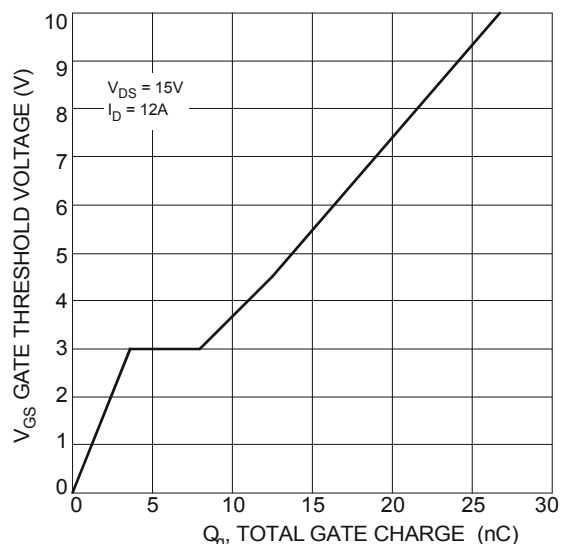
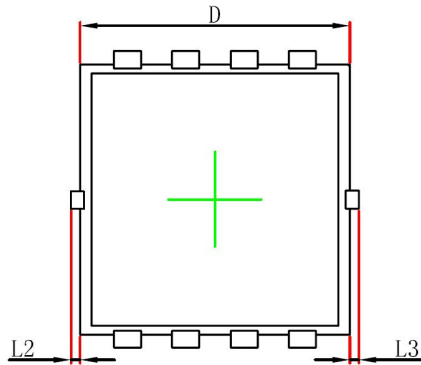
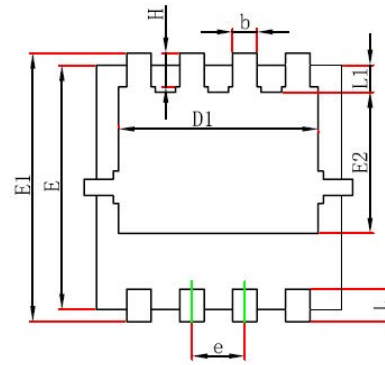


Fig.12 Gate Charge

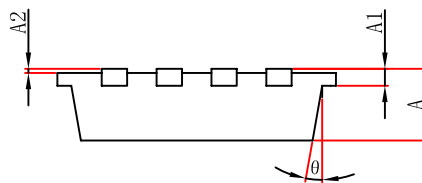
PDFN3.3*3.3-8L PACKAGE OUTLINE DRAWING



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
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°