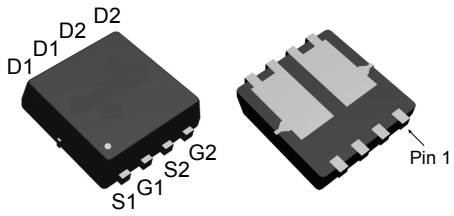
Features

- 40V/25A,
  $R_{DS(ON)}$ = 13mΩ (typ.) @ V_{GS} = 10V
  $R_{DS(ON)}$ = 17mΩ (typ.) @ V_{GS} = 4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

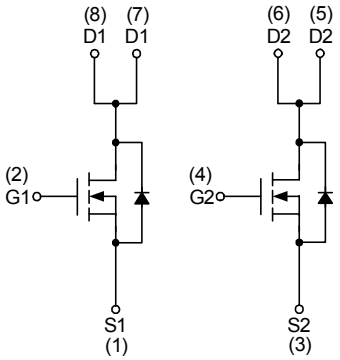
Applications

- Car charger.
- Power Management in Note book.
- Battery Powered System.
- DC/DC Converter.
- Load Switch.

Pin Description



PDFN3.3*3.3-8L



N-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S	Diode Continuous Forward Current	T_C=25°C	25	A
I_{DM} [a]	Pulsed Drain Current	T_C=25°C	75	
I_D [b]	Continuous Drain Current	T_C=25°C	25	
		T_C=70°C	18.75	
P_D [b]	Power Dissipation	T_C=25°C	1.31	W
		T_C=70°C	0.84	
$R_{\theta JA}$ [b]	Thermal Resistance-Junction to Ambient	t ≤ 10s	54	°C/W
		Steady State	95	
$R_{\theta JL}$	Thermal Resistance-Junction to Lead	Steady State	32	
I_{AS} [c]	Avalanche Current, Single pulse	L=0.1mH	40	A
E_{AS} [c]	Avalanche Energy, Single pulse	L=0.1mH	80	mJ

Note a：Max. current is limited by bonding wire.
Note b：$R_{\theta JA}$ steady state t=999s. $R_{\theta JA}$ is measured with the device mounted on 1in2, FR-4 board with 2oz. Copper.
Note c：UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).

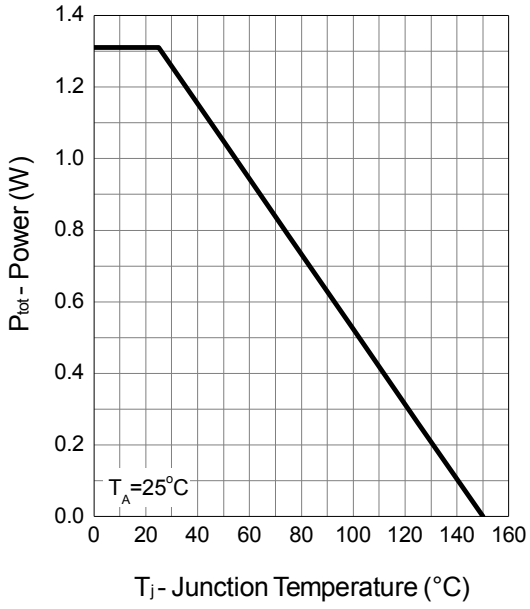
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=32V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.5	1.8	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=12A	-	13	17	mΩ
		V_{GS}=4.5V, I_{DS}=10A	-	17	21	
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=10A, V_{GS}=0V	-	0.88	1.1	V
t_{rr}	Reverse Recovery Time	I_{DS}=12A, dI_{SD}/dt=100A/μs	-	17	-	ns
Q_{rr}	Reverse Recovery Charge	V_{DS}=20V	-	12	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1.3	2.5	Ω
C_{iss}	Input Capacitance	V_{GS}=0V,	-	1095	1424	pF
C_{oss}	Output Capacitance	V_{DS}=20V,	-	135	176	
C_{rss}	Reverse Transfer Capacitance	Frequency=1.0MHz	-	74	111	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=30V, R_L=30Ω,	-	8.2	-	ns
t_r	Turn-on Rise Time	I_{DS}=1A, V_G=10V,	-	6.8	-	
$t_{d(OFF)}$	Turn-off Delay Time	R_G=6Ω	-	25.2	-	
t_f	Turn-off Fall Time		-	6.4	-	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=20V, V_{GS}=10V, I_{DS}=12A	-	20	30	nC
Q_g	Total Gate Charge	V_{DS}=20V, V_{GS}=4.5V I_{SD}=12A	-	9.6	-	
Q_{gs}	Gate-Source Charge		-	2.5	-	
Q_{gd}	Gate-Drain Charge		-	3.8	-	
Q_{gth}	Threshold Gate Charge		-	1.5	-	

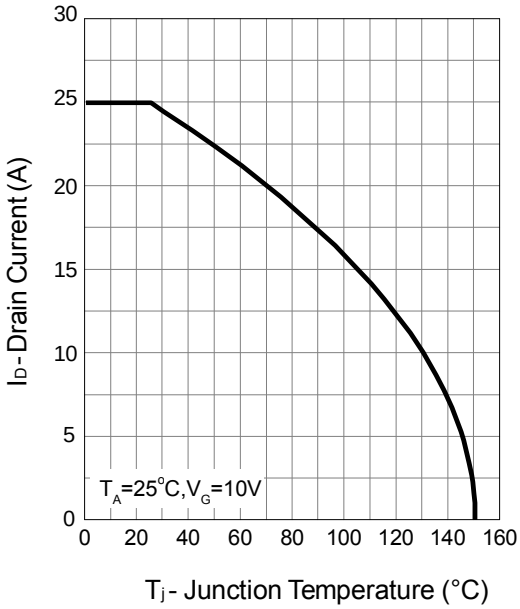
Note d：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

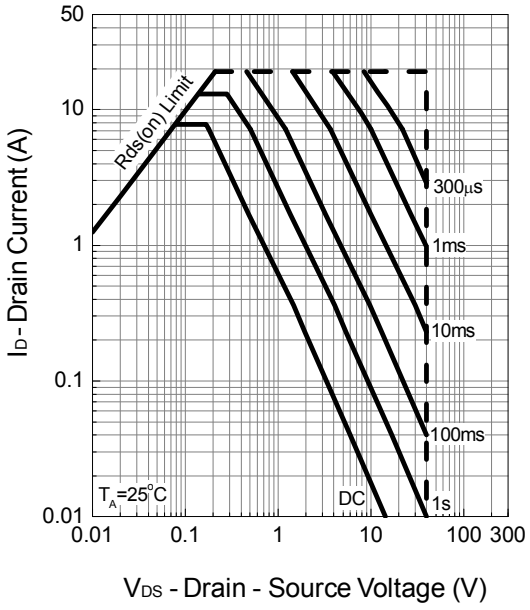
Power Dissipation



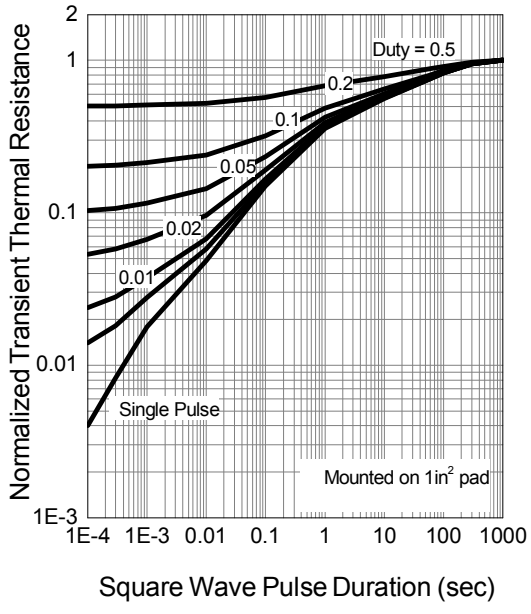
Drain Current



Safe Operation Area

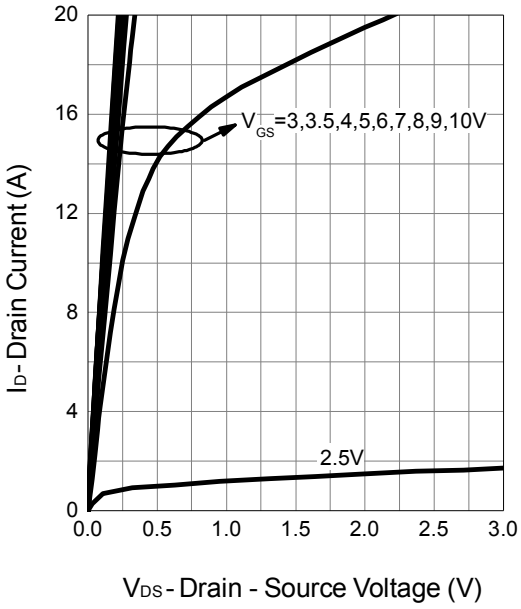


Thermal Transient Impedance

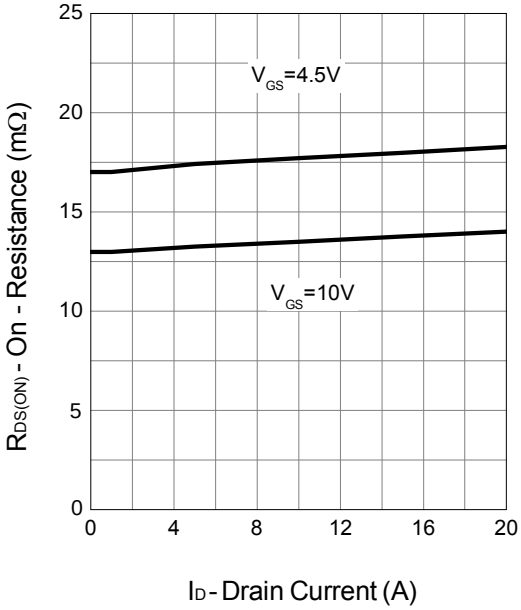


Typical Operating Characteristics (Cont.)

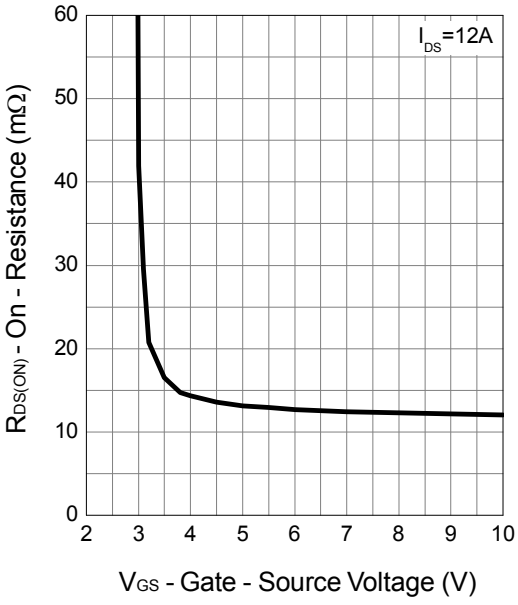
Output Characteristics



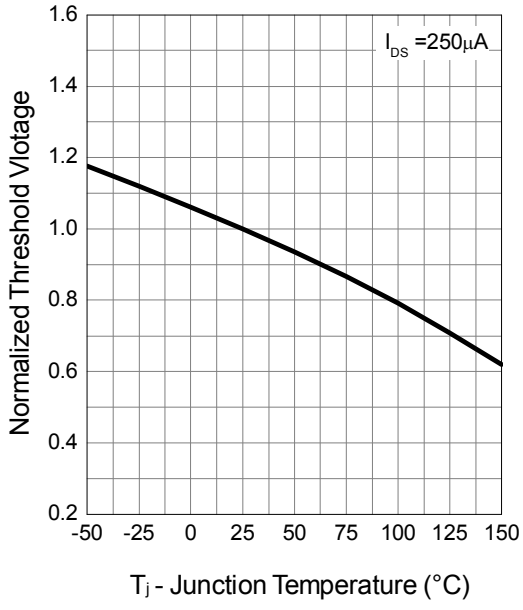
Drain-Source On Resistance



Gate-Source On Resistance

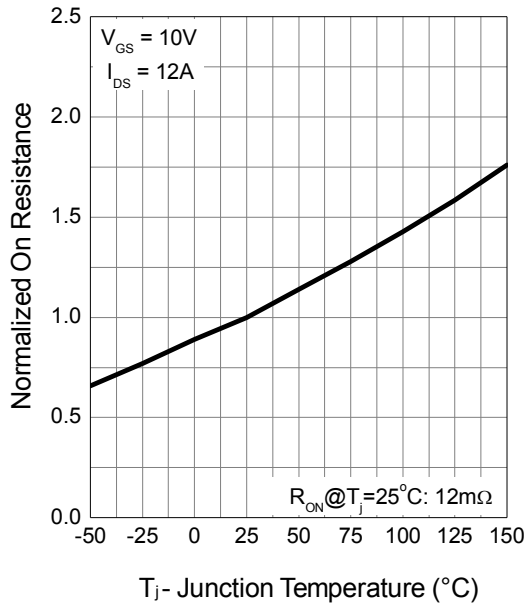


Gate Threshold Voltage

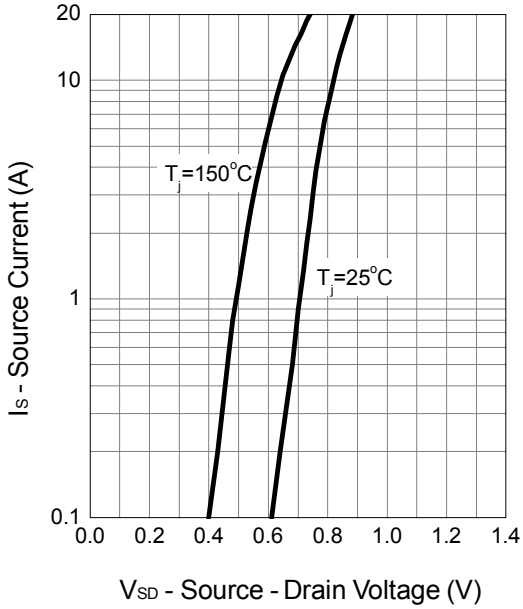


Typical Operating Characteristics (Cont.)

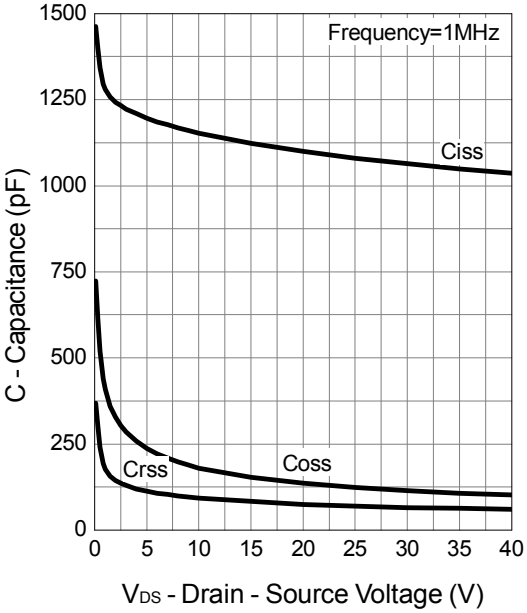
Drain-Source On Resistance



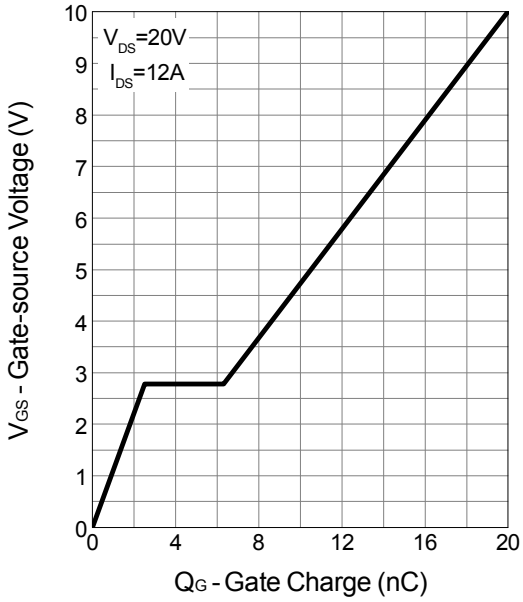
Source-Drain Diode Forward



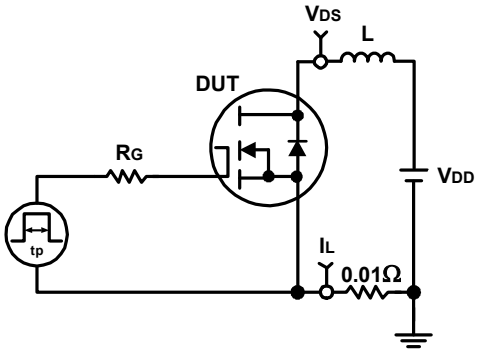
Capacitance

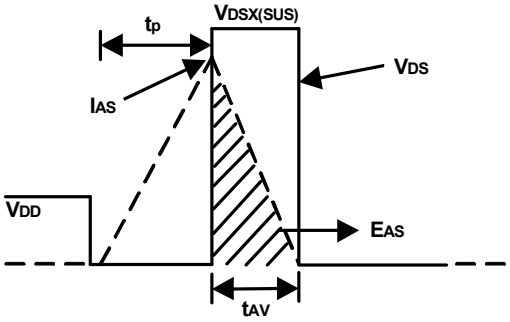


Gate Charge

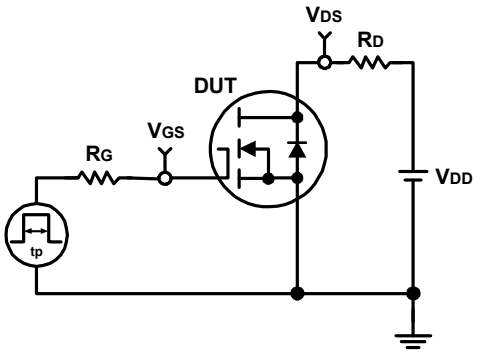


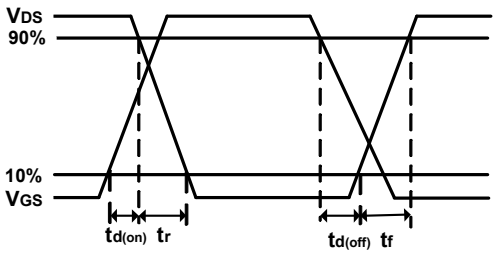
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms





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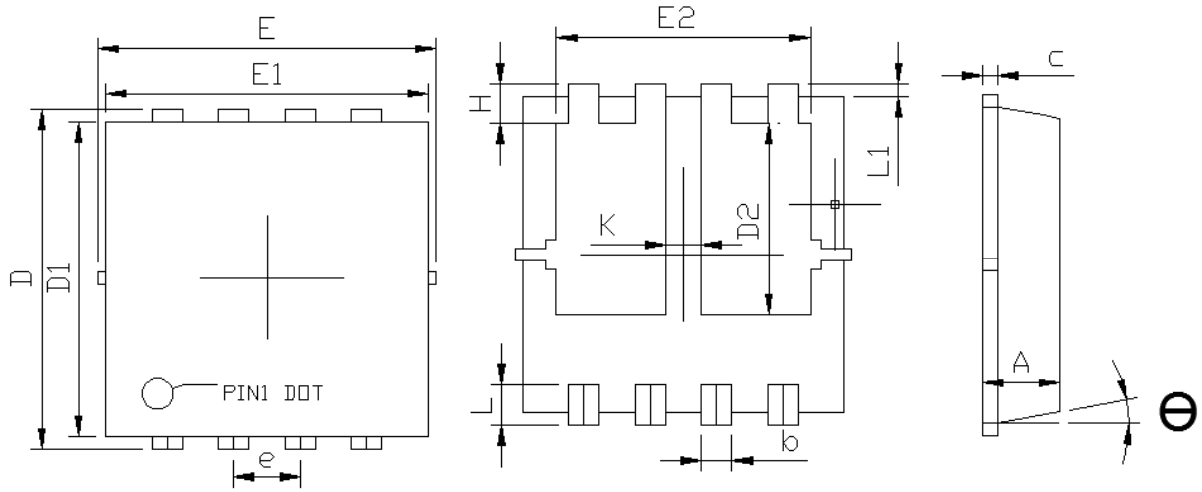
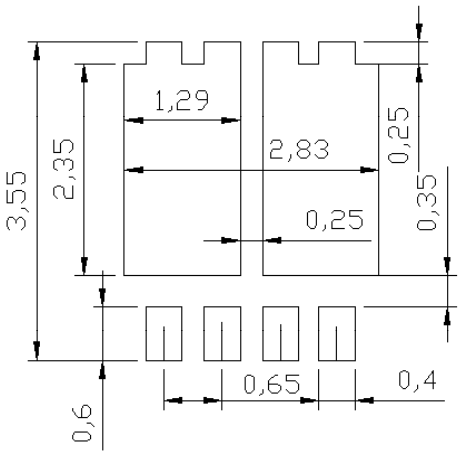


Top View　　Bottom View　　Side View

SYMBOLS	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	0.80	0.028	0.031
b	0.25	0.35	0.010	0.014
c	0.10	0.25	0.004	0.010
D	3.25	3.45	0.128	0.136
D1	3.00	3.20	0.118	0.126
D2	1.78	1.98	0.070	0.078
E	3.20	3.40	0.126	0.134
E1	3.00	3.20	0.118	0.126
E2	2.39	2.59	0.094	0.102
e	0.65BSC		0.026 BSC	
H	0.30	0.50	0.012	0.020
L	0.30	0.50	0.012	0.020
L1	0.13 REF		0.005 REF	
K	0.30	-	0.012	-
θ	-	12°	-	12°

RECOMMENDED LAND PATTERN



UNIT: mm