

N-Channel 30V(D-S) MOSFET

Product summary		
V_{DS}	30	V
$R_{DS(ON)}$ (at $V_{GS}=10V$) Typ.	2.2	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$) Typ.	2.6	m Ω
I_D (at $V_{GS}=10V$)	150	A

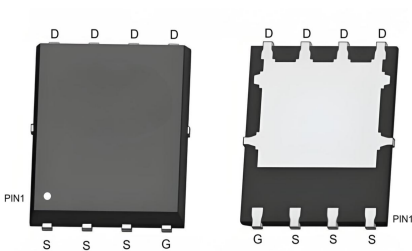
Features

- Very Low $R_{DS(ON)}$ at 4.5V V_{GS}
- Fast Switching
- 100% Avalanche Tested
- RoHS and Halogen-Free Compliant

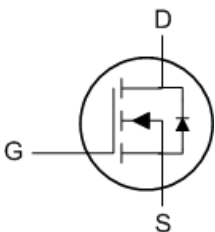
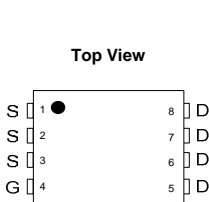
Applications

- Synchronous Rectification
- Networking DC-DC Power System
- Power Tool Application

Pin Configuration



PDFN5X6-8L



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
EC8312	PDFN5X6-8L	13"	3000pcs

Absolute Maximum Ratings (at TA=25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current at $V_{GS}=10V$ ^A	$T_C=25^{\circ}C$	150	A
		$T_C=100^{\circ}C$	96	A
I_{DM}	Pulse Drain Current Tested ^B	$T_C=25^{\circ}C$	500	A
I_S	Diode Continuous Forward Current	$T_C=25^{\circ}C$	150	A
I_{AS}	Avalanche Current		85	A
E_{AS}	Avalanche Energy ^C	$I_D=40A$	80	mJ
P_D	Power Dissipation	$T_C=25^{\circ}C$	125	W
T_J, T_{STG}	Junciton and Storage Temperature Range		-55 to 175	°C

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JC}$	Thermal Resistance-Junction to Case ^A	1.2	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction-Ambient ^A	50	°C/W

Electrical Characteristics (at T_J =25°C Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV _{DSS}	Drain-Source Voltage	V _{GS} =0V,I _D =250uA	30	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(T _C =25℃)	V _{DS} =24V,V _{GS} =0V	--	--	1	uA
	Zero Gate Voltage Drain Current(T _C =125℃)	V _{DS} =24V,V _{GS} =0V	--	--	100	uA
I _{GSS}	Gate-Body Leakage Current	V _{DS} =0V,V _{GS} =±20V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	0.7	1.0	2.0	V
R _{DS(ON)}	Drain-Source On-State Resistance ^B	V _{GS} =10V,I _D =30A	--	2.2	4.0	mΩ
		V _{GS} =4.5V,I _D =20A	--	2.6	5.0	mΩ
		V _{GS} =3.3V,I _D =5A	--	3.2	6.0	mΩ
V _{SD}	Forward Voltage	I _{SD} =30A,V _{GS} =0V	--	0.82	1.2	V
Dynamic Parameters ^D						
C _{iss}	Input Capacitance	V _{GS} =0V,V _{DS} =15V f=1MHZ	--	5150	--	pF
C _{oss}	Output Capacitance		--	580	--	pF
C _{rss}	Reverse Transfer Capacitance		--	405	--	pF
Q _g	Total Gate Charge	V _{DS} =15V,I _D =20A V _{GS} =10V	--	85	--	nC
Q _{gs}	Gate-Source Charge		--	14	--	nC
Q _{gd}	Gate-Drain Charge		--	23	--	nC
Switching Parameters ^D						
t _{D(on)}	Turn-on Delay Time	V _{DS} =15V,I _D =20A R _G =3Ω,V _{GS} =10V	--	14	--	nS
t _r	Turn-on Rise Time		--	18	--	nS
t _{D(off)}	Turn-off Delay Time		--	43	--	nS
t _f	Turn-off Fall Time		--	16	--	nS
t _{rr}	Reverse Recovery Time	I _{SD} =20A,V _{GS} =0V dI/dt=100A/us	--	37	--	nS
Q _{rr}	Reverse Recovery Charge		--	32	--	nC

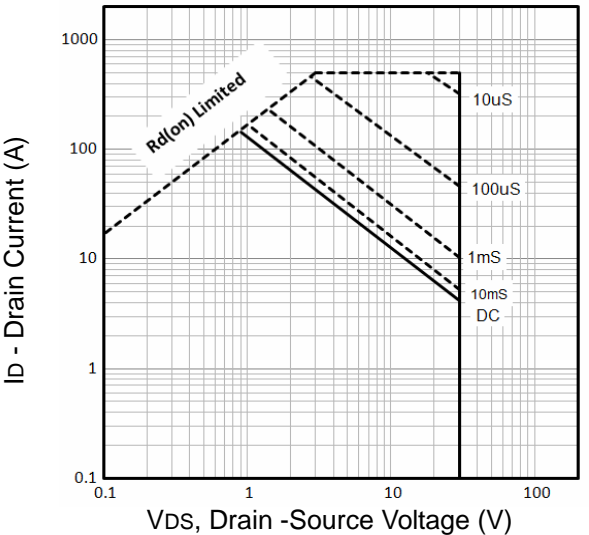
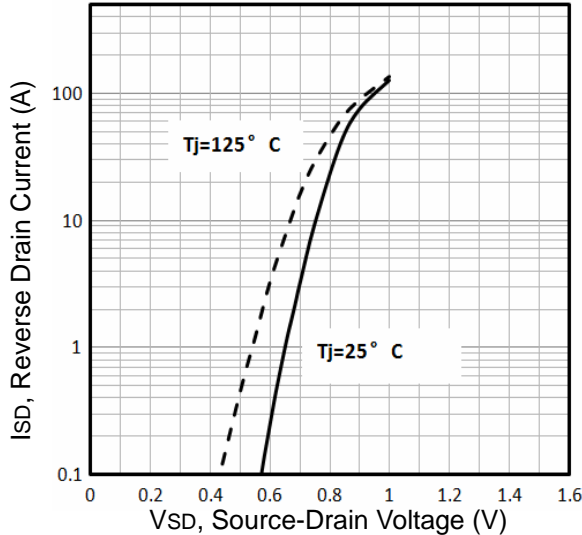
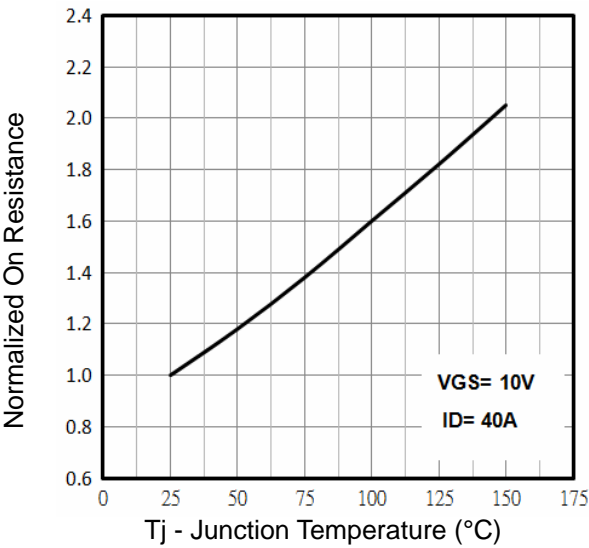
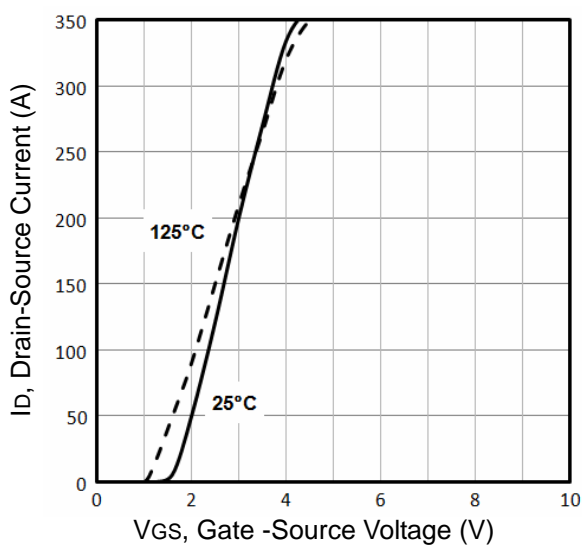
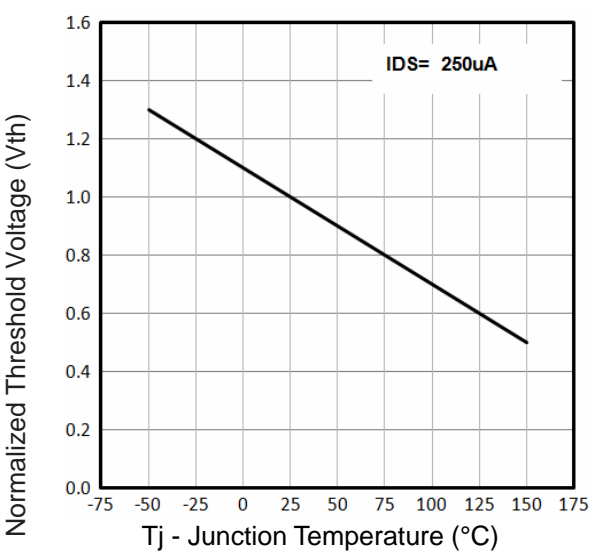
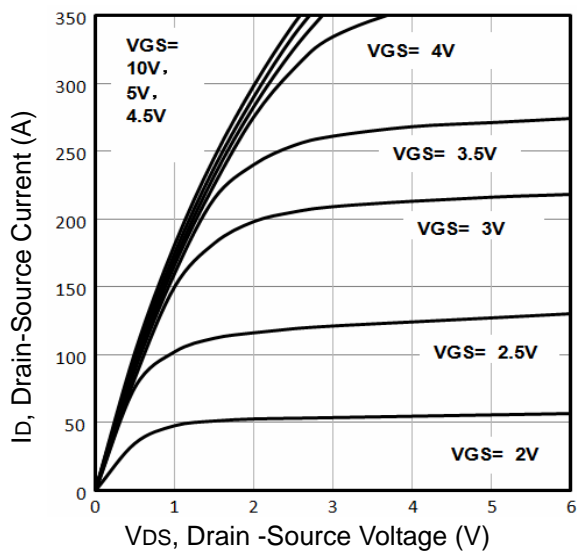
A. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

B. The data tested by pulsed , pulse width≤300us , duty cycle≤2%.

C. The EAS data shows Max. rating . The test condition is I_{AS}=40A, V_{GS}=10V, L=0.1mH, R_g=25Ω.

D. Guaranteed by design, not subject to production testing.

Typical Characteristics



Typical Characteristics

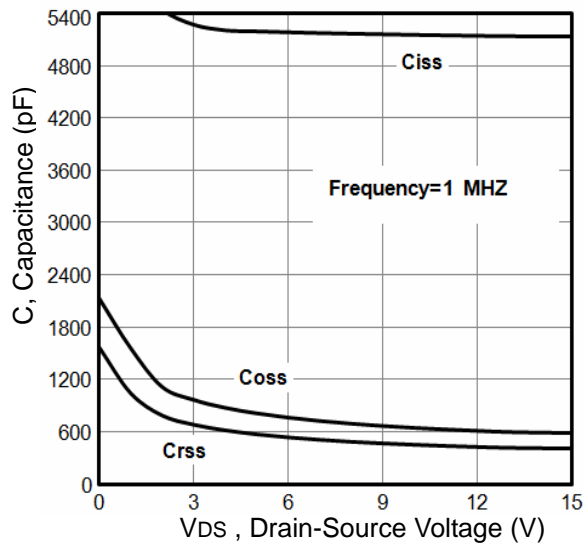


Fig7. Typical Capacitance Vs. Drain-Source Voltage

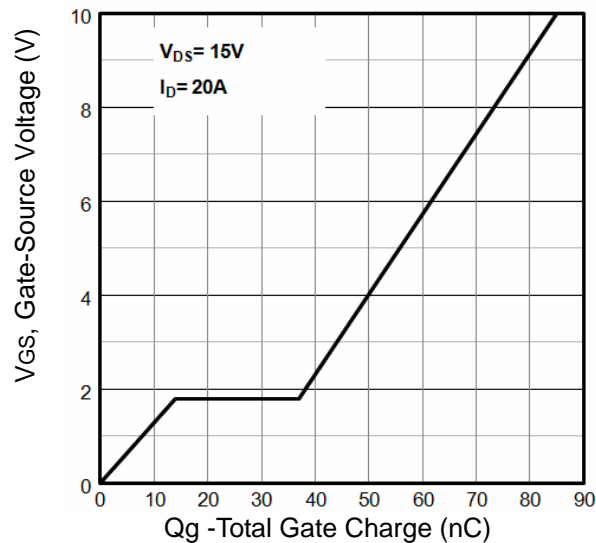


Fig8. Typical Gate Charge Vs. Gate-Source

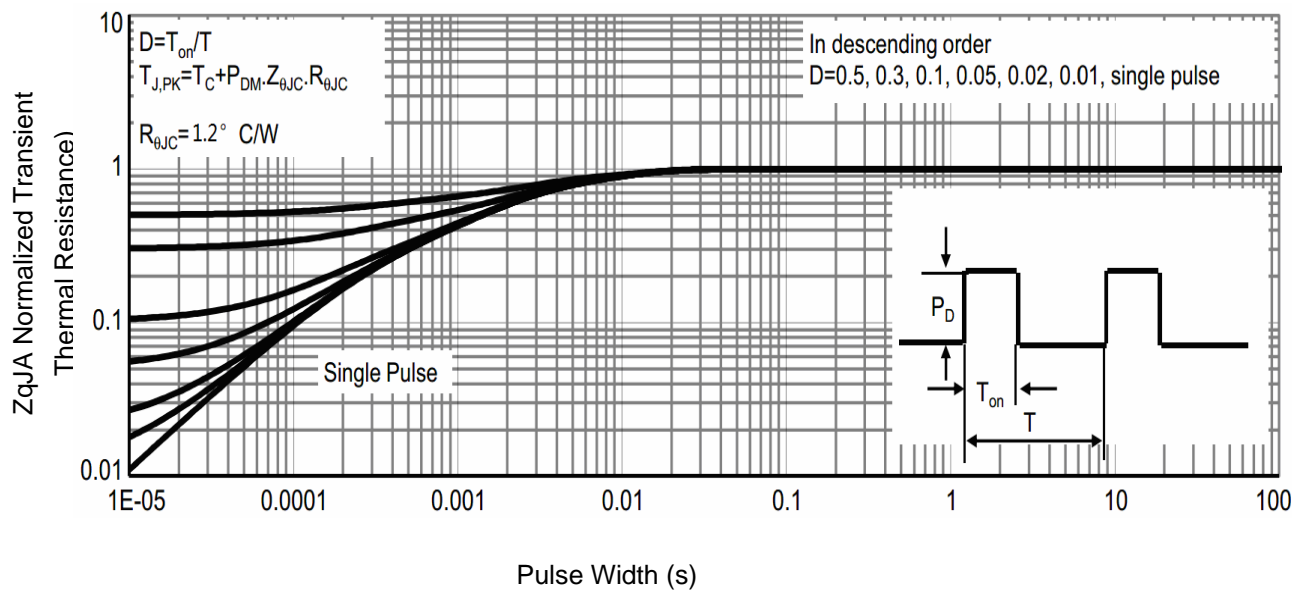


Fig9. Normalized Maximum Transient Thermal Impedance

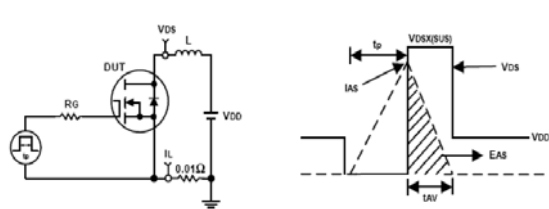


Fig10. Unclamped Inductive Test Circuit and waveforms

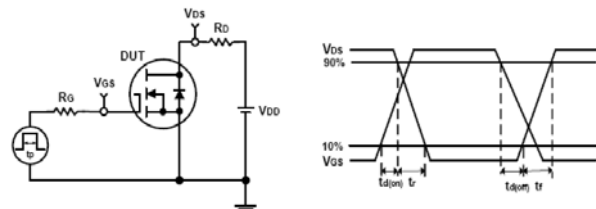
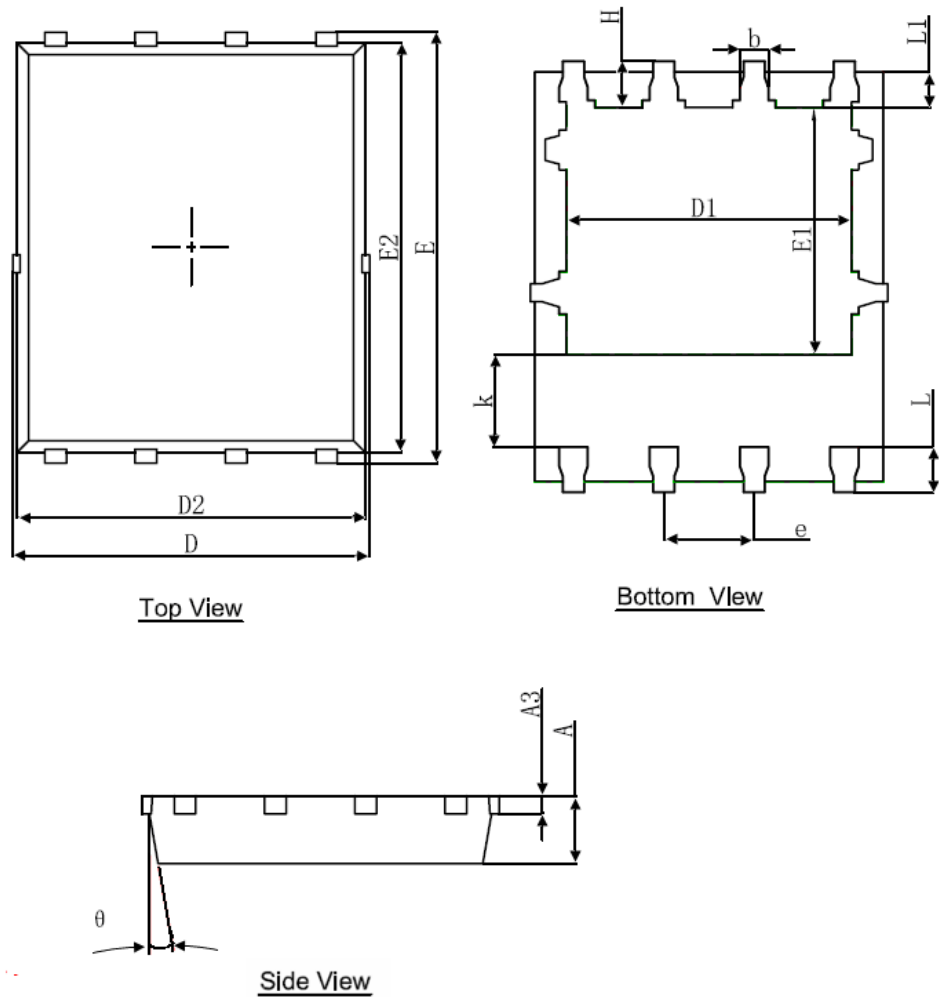


Fig11. Switching Time Test Circuit and waveforms

PDFN5X6 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	8°	12°	8°	12°