

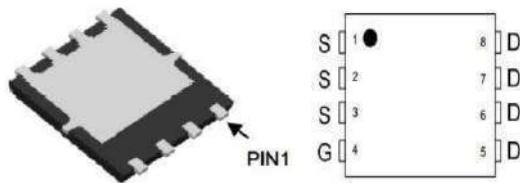
Features

- Advanced Trench Process Technology
- Low RDS(ON) to Minimize Conduction Losses
- Low Qg and Capacitance to Minimize Driver Losses
- Superior thermal resistance
- Excellent Gate Charge x RDS(ON) Product (FOM)
- Fully Characterized Capacitance and Avalanche SOA
- Pb-free lead plating; RoHS Compliant
- Halogen-free According to IEC61249-2-21

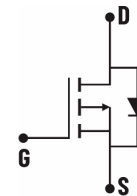
Product Summary



V_{DS}	-30	V
$R_{DS(on), Typ @ V_{GS}=10 V}$	2.7	mΩ
I_D	-100	A



PDFN5x6-8



P-Channel

Absolute Maximum Ratings ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit	
V_{DS}	Drain-Source Voltage	-30	V	
V_{GS}	Gate-Source Voltage	± 20	V	
I_D	Drain Current-Continuous	$T_C = 25^\circ\text{C}$	-100	A
I_D		$T_C = 100^\circ\text{C}$	-59	A
I_{DM}	Drain Current-Pulsed ^{Note A}	$T_C = 25^\circ\text{C}$	-350	A
I_{AS}	Non-repetitive Avalanche Current ^{Note C, E}	-90	A	
E_{AS}	Single Pulse Drain-to-Source Avalanche Energy ^{Note C, D}	405	mJ	
P_{tot}	Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	54.5	W
T_J, T_{STG}	Operating and Storage Temperature Range	IEC climatic category; DIN IEC 68-1: 55/150/56	-55 to +150	$^\circ\text{C}$

Thermal Resistance Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient ^{Note B}	Steady State	-	-	35	$^\circ\text{C/W}$
$R_{\theta JS}$	Junction-to-Soldering Point	Steady State	-	-	2.3	$^\circ\text{C/W}$

Notes:

- Repetitive rating, pulse width limited by junction temperature $T_{Jmax} = +150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J = +25^\circ\text{C}$.
- $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JS}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design. $R_{\theta JA}$ shown below for single device operation on FR-4 in still air.
- Limited by T_{Jmax} , starting $T_J = +25^\circ\text{C}$, $L = 0.1\text{mH}$, $R_\theta = 50\Omega$, $V_{GS} = -10\text{V}$.
- I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep $T_J = +25^\circ\text{C}$.
- Guaranteed by design. Not subject to product testing.
- Repetitive Avalanche Current Starting $T_J = +25^\circ\text{C}$, $L = 0.1\text{mH}$, $I_{AS} = -53\text{A}$, $V_{GS} = -10\text{V}$, $V_{DD} = -30\text{V}$

Electrical Characteristics (T_J=25°C unless otherwise noted)
STATIC CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _{DS} = -250μA	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -24V, V _{GS} = 0V	-	-	-1	μA
		V _{DS} = -24V, V _{GS} = 0V, T _J = 125°C	-	-	-100	μA
I _{GSS}	Gate-Body Leakage	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA

STATIC CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = -250μA	-1	-1.6	-2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance ^{Note A}	V _{GS} = -10V, I _{DS} = -18A	-	2.7	3.1	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance ^{Note A}	V _{GS} = -4.5V, I _{DS} = -10A	-	4	5	mΩ
R _g	Gate Resistance ^{Note E}	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	-	1.7	-	Ω
g _{fs}	Forward Transconductance	V _{DS} = -10V, I _{DS} = -5A	-	27	-	S

DYNAMIC CHARACTERISTICS ^{Note E}

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
C _{iss}	Input Capacitance	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz	-	8000	-	pF
C _{oss}	Output Capacitance	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz	-	802	-	pF
C _{rss}	Reverse Transfer Capacitance	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz	-	630	-	pF
T _{d(on)}	Turn-On Delay Time	V _{DS} = -15V, V _{GS} = -10V, I _{DS} = -18A, R _{GEN} = 6Ω	-	69	-	ns
t _r	Rise Time	V _{DS} = -15V, V _{GS} = -10V, I _{DS} = -18A, R _{GEN} = 6Ω	-	56	-	ns
T _{d(off)}	Turn-Off Delay Time	V _{DS} = -15V, V _{GS} = -10V, I _{DS} = -18A, R _{GEN} = 6Ω	-	68	-	ns
t _f	Fall Time	V _{DS} = -15V, V _{GS} = -10V, I _{DS} = -18A, R _{GEN} = 6Ω	-	16	-	ns

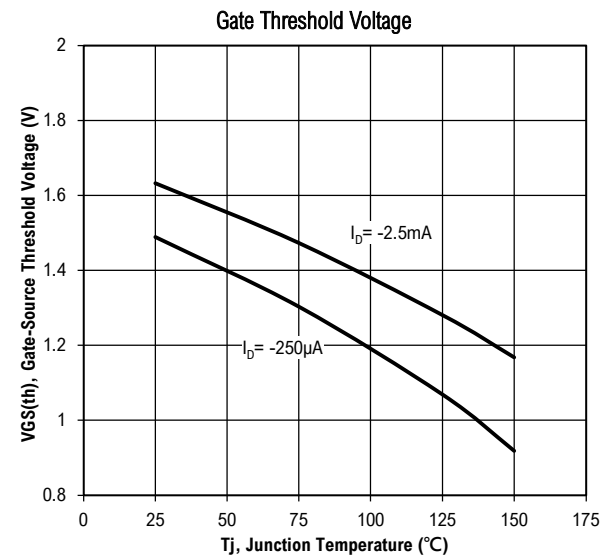
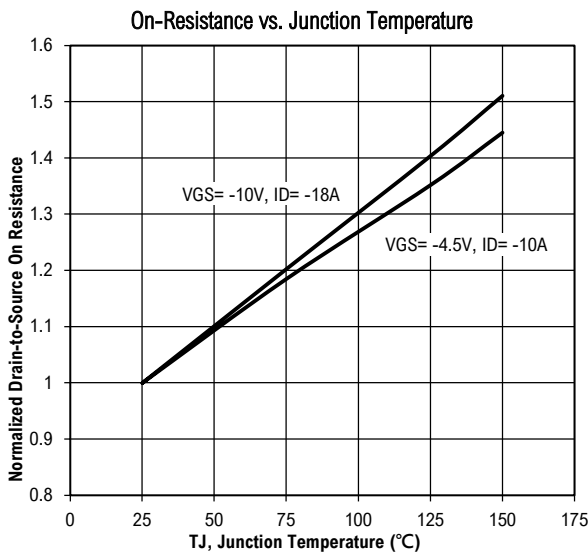
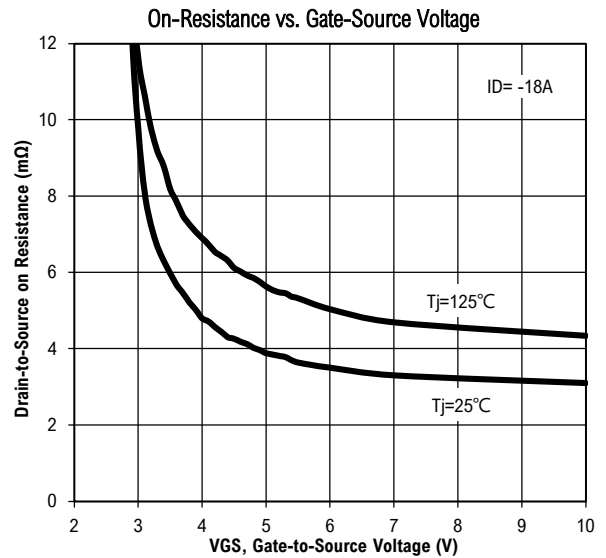
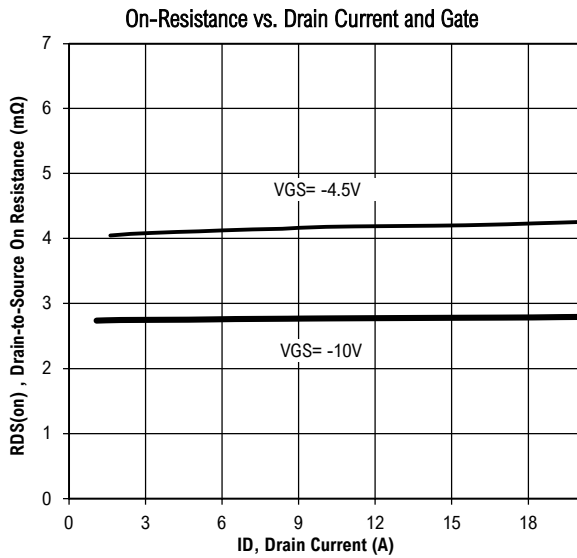
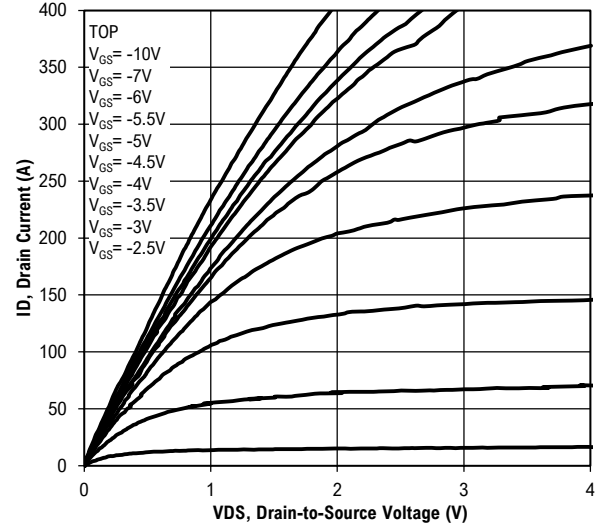
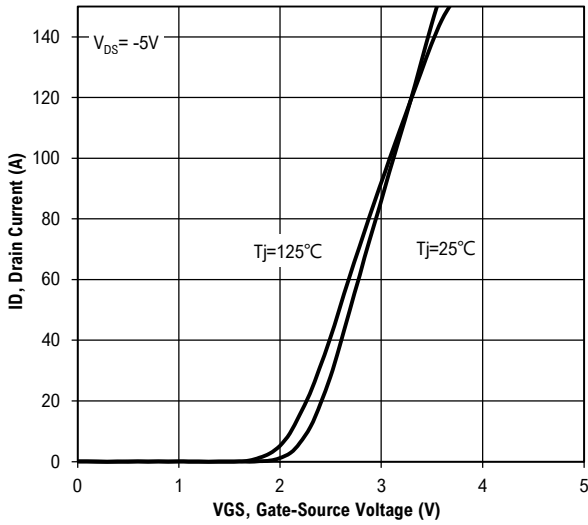
GATE CHARGE CHARACTERISTICS ^{Note E}

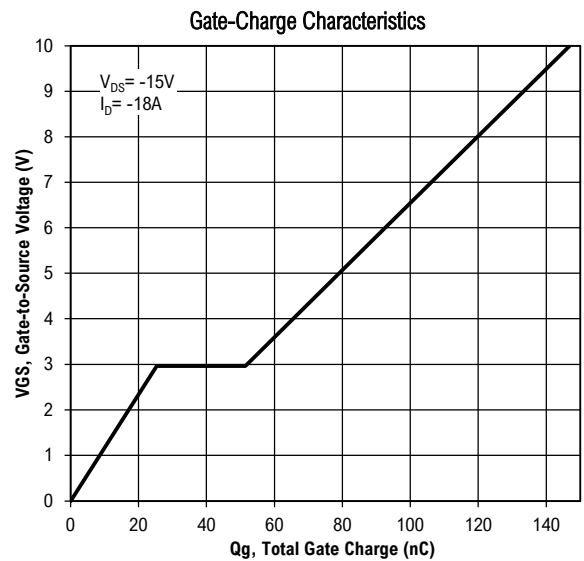
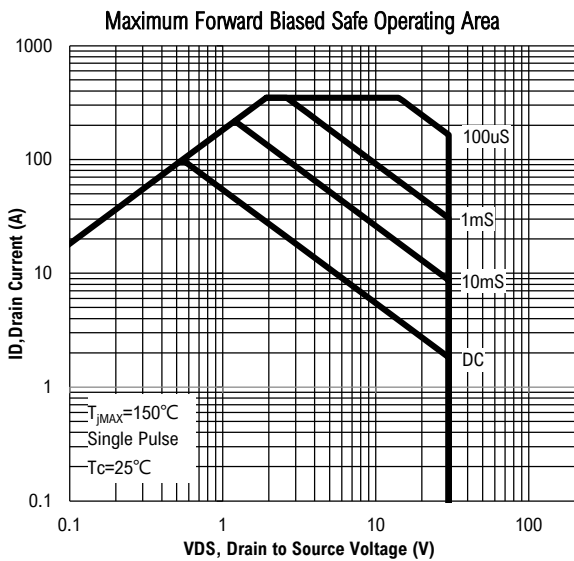
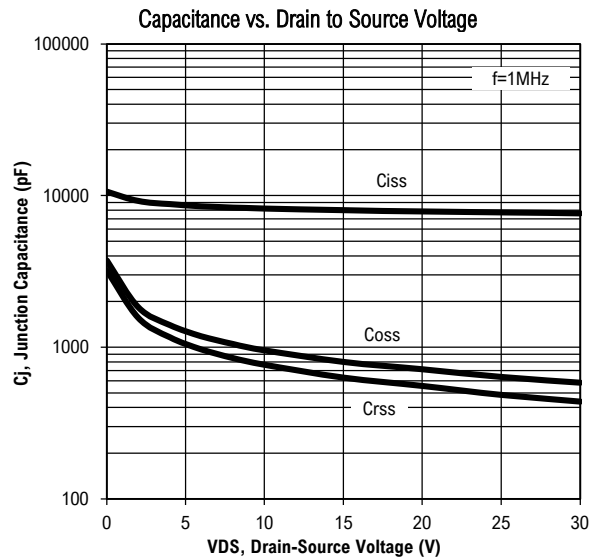
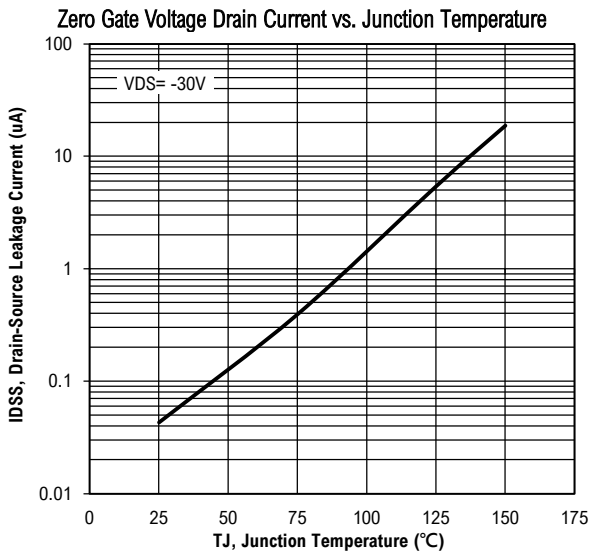
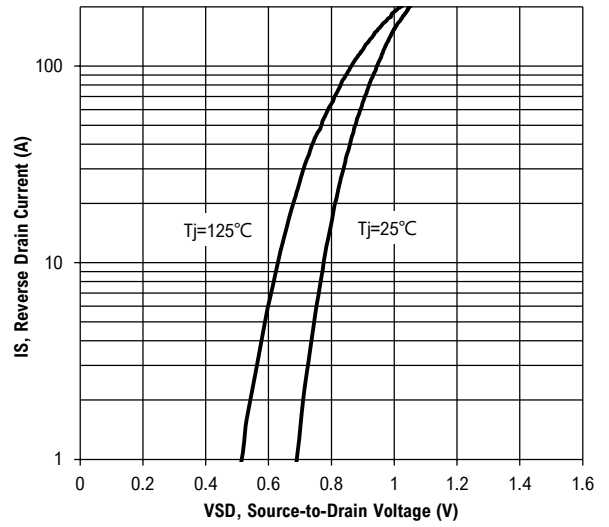
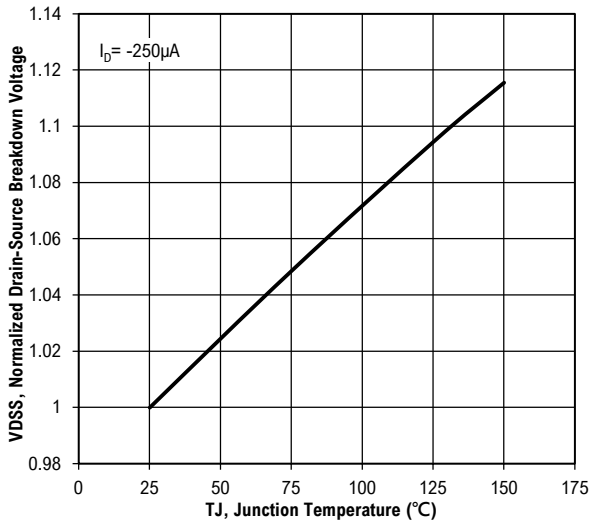
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _{gs}	Gate to Source Gate Charge	V _{DD} = -15V, I _D = -18A, V _{GS} = 0 to -10V	-	25.1	-	nC
Q _{g(th)}	Gate charge at threshold	V _{DD} = -15V, I _D = -18A, V _{GS} = 0 to -10V	-	11.8	-	nC
Q _{gd}	Gate to Drain Charge	V _{DD} = -15V, I _D = -18A, V _{GS} = 0 to -10V	-	27.8	-	nC
Q _{sw}	Switching charge	V _{DD} = -15V, I _D = -18A, V _{GS} = 0 to -10V	-	41	-	nC
Q _g	Gate charge total	V _{DD} = -15V, I _D = -18A, V _{GS} = 0 to -10V	-	147.2	-	nC
Q _g	Gate charge total	V _{DD} = -15V, I _D = -18A, V _{GS} = 0 to -4.5V	-	71.2	-	nC
V _{plateau}	Gate plateau voltage	V _{DD} = -15V, I _D = -18A, V _{GS} = 0 to -10V	-	3.1	-	V
Q _{g(sync)}	Gate charge total, sync. FET (Q _g - Q _{gd}) ^{Note E}	V _{DS} = -0.1V, V _{GS} = 0 to -10V	-	119.4	-	nC

REVERSE DIODE

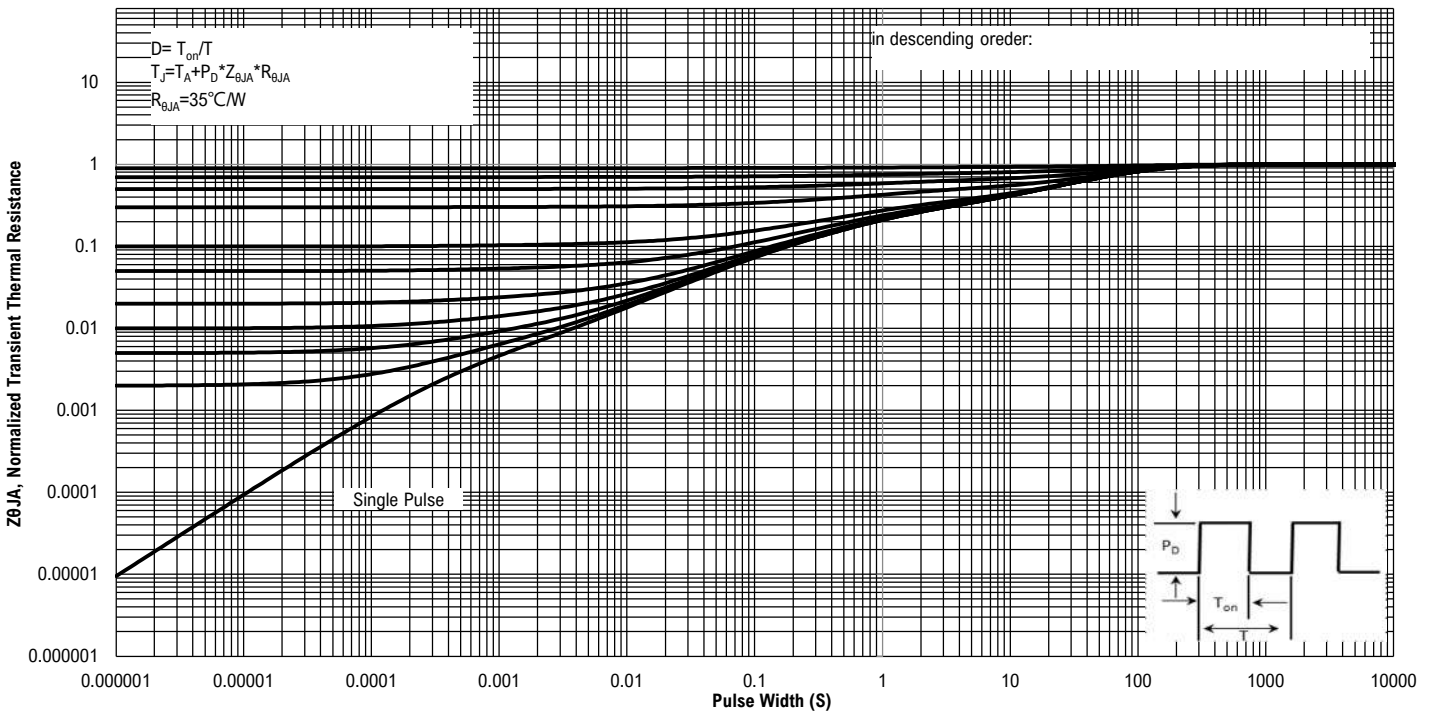
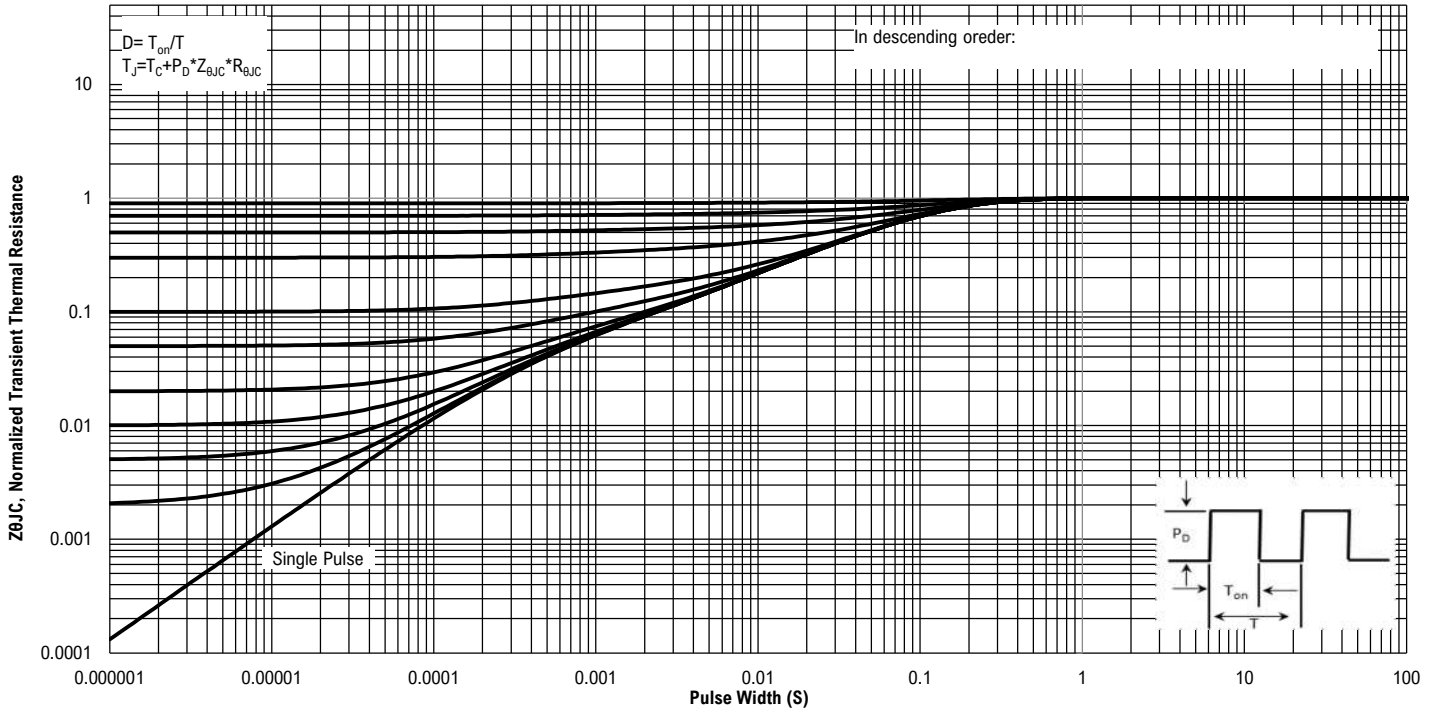
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Diode continuous forward current	T _C = 25°C	-	-	-100	A
I _{SM}	Diode pulse current	T _C = 25°C	-	-	-350	A
V _{SD}	Diode Forward Voltage ^{Note A}	V _{GS} = 0V, I _F = -18A	-	-	-1.2	V
t _{rr}	Body Diode Reverse Recovery Time ^{Note E}	V _{DD} = -15V, I _F = -18A, di/dt = 100A/μs	-	25	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge ^{Note E}	V _{DD} = -15V, I _F = -18A, di/dt = 100A/μs	-	20	-	nC

Typical Performance Characteristics



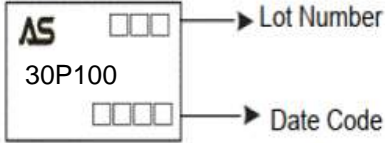


Transient Thermal Resistance

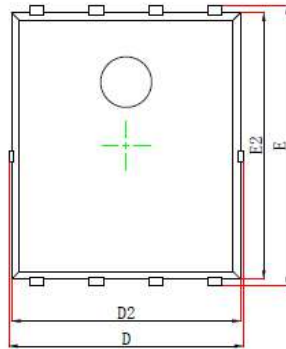


Ordering and Marking Information

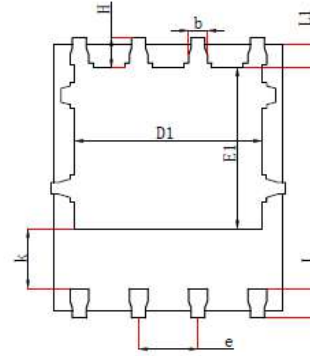
Ordering Device No.	Marking	Package	Packing	Quantity
ASDM30P100Q-R	30P100	PDFN5*6-8	Tape&Reel	4000/Reel

PACKAGE	MARKING
PDFN5*6-8	 <p>AS □□□ → Lot Number 30P100 □□□□ → Date Code</p>

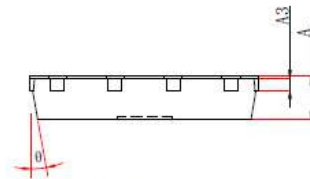
PDFN5*6-8



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	0.900	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	10°	12°	10°	12°

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