

Features

- Provide Excellent RDS(ON)
- Advanced Trench Technology
- Low Gate Charge
- Lead free product is acquired

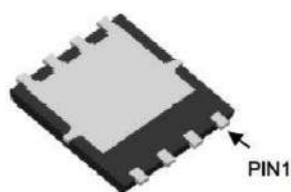
Application

- Load Switch
- PWM Application
- Power management

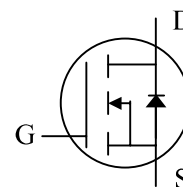
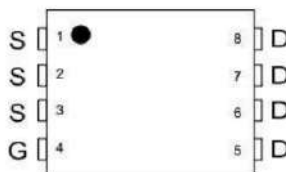
Product Summary



V_{DS}	30	V
$R_{DS(on), Typ @ V_{GS}=10 V}$	5.0	mΩ
I_D	40	A



PDFN3.3x3.3-8



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

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	40	A
		$T_C = 100^\circ\text{C}$	20	A
I_{DM}	Pulsed Drain Current ^{note1}		160	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}		39	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	25.5	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		4.8	$^\circ\text{C/W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ\text{C}$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ 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 =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.4	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} =10V, I _D =20A	-	5	8	mΩ
		V _{GS} =4.5V, I _D =15A	-	8.0	14	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1.0MHz	-	853	-	pF
C _{oss}	Output Capacitance		-	142	-	pF
C _{rss}	Reverse Transfer Capacitance		-	116	-	pF
Q _g	Total Gate Charge	V _{DS} =15V, I _D =15A, V _{GS} =10V	-	13.3	-	nC
Q _{gs}	Gate-Source Charge		-	3.1	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	5	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V, I _D =15A, R _{GEN} =3Ω, V _{GS} =10V	-	15	-	ns
t _r	Turn-on Rise Time		-	19	-	ns
t _{d(off)}	Turn-off Delay Time		-	35	-	ns
t _f	Turn-off Fall Time		-	21	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	30	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	160	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =20A	-	0.8	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F =30A,dI/dt=100A/μs	-	14	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	4.1	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: $T_J=25^{\circ}\text{C}$, $V_{GS}=10V$, $R_G=25\Omega$, $L=0.5mH$, $I_{AS}=12.6A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Performance Characteristics

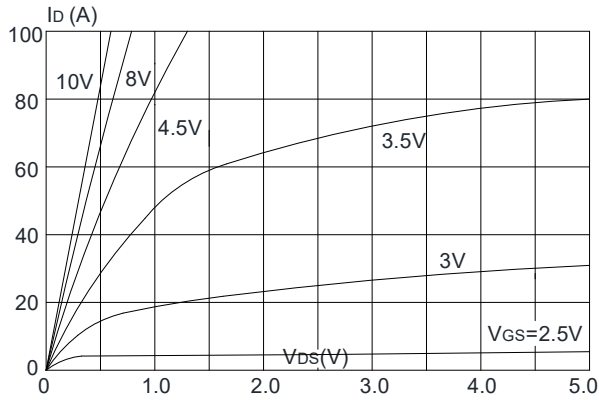


Figure 1: Output Characteristics

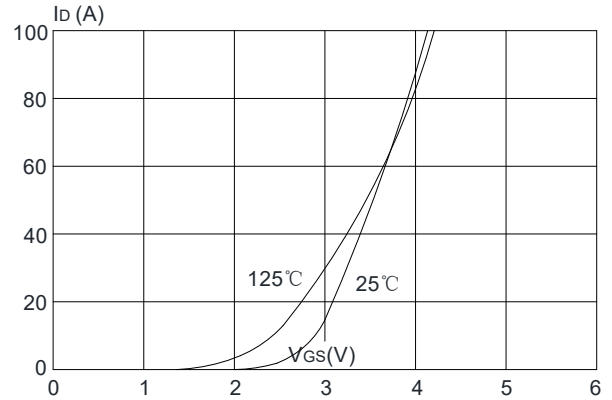


Figure 2: Typical Transfer Characteristics

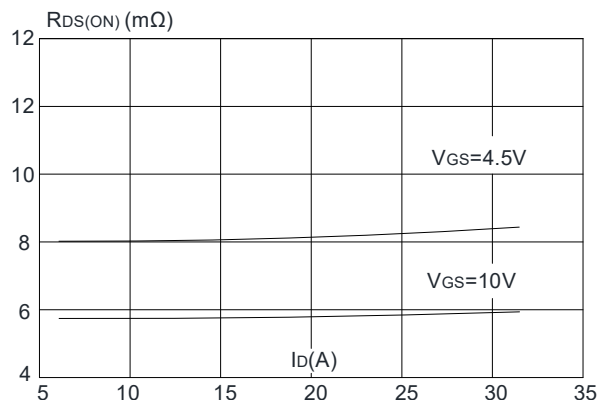


Figure 3: On-resistance vs. Drain Current

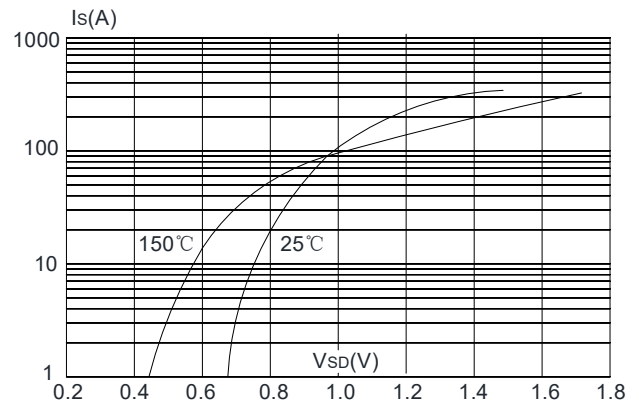


Figure 4: Body Diode Characteristics

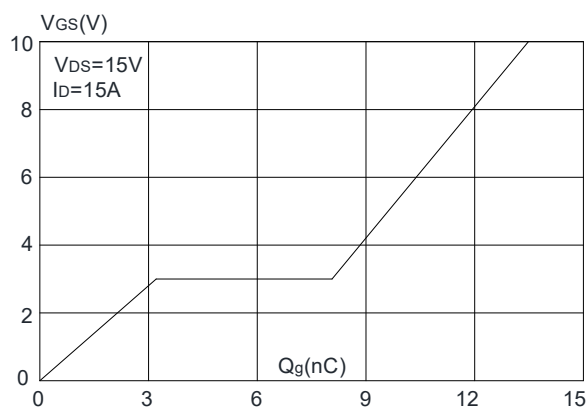


Figure 5: Gate Charge Characteristics

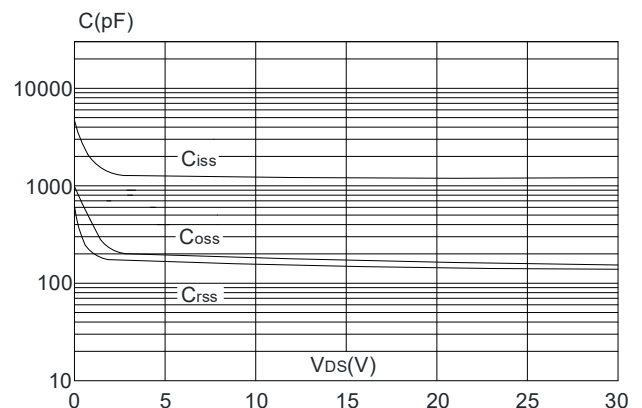


Figure 6: Capacitance Characteristics

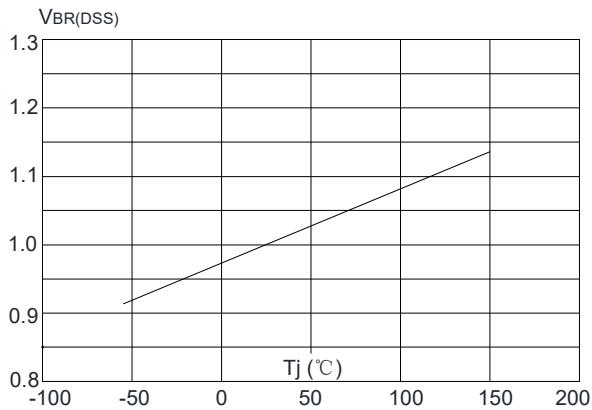


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

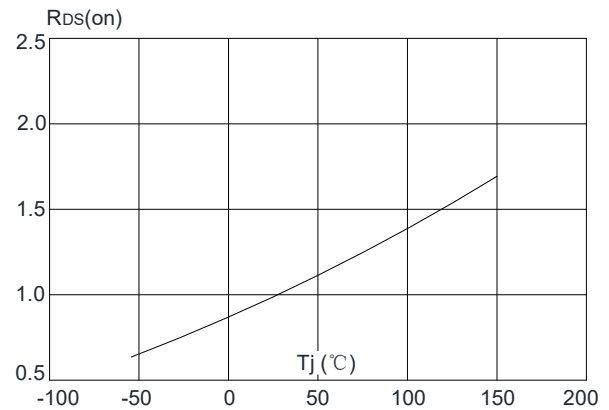


Figure 8: Normalized on Resistance vs. Junction Temperature

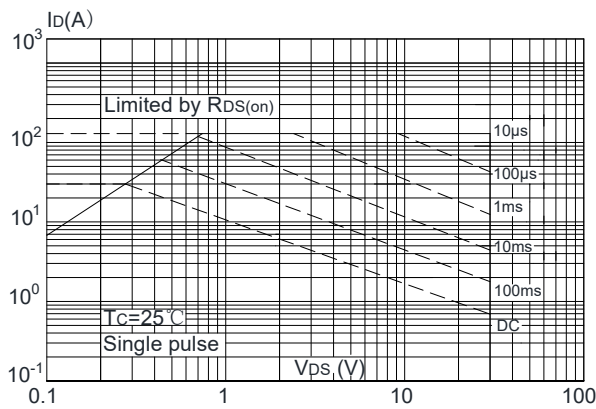


Figure 9: Maximum Safe Operating Area

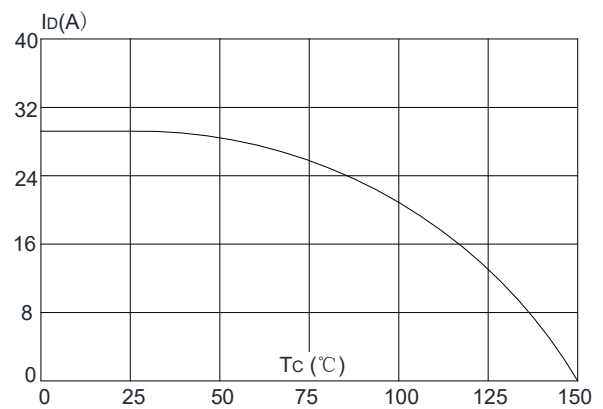


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

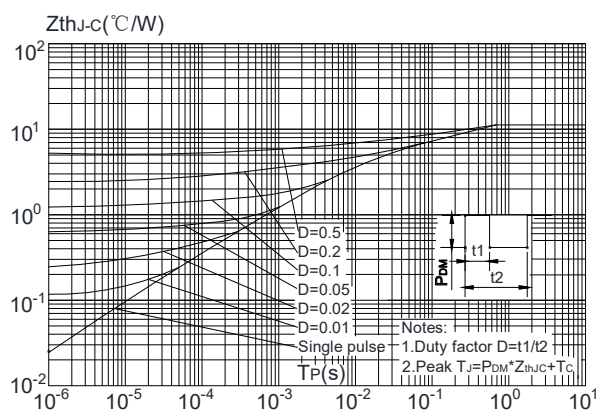
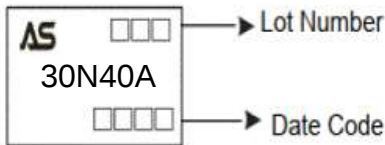
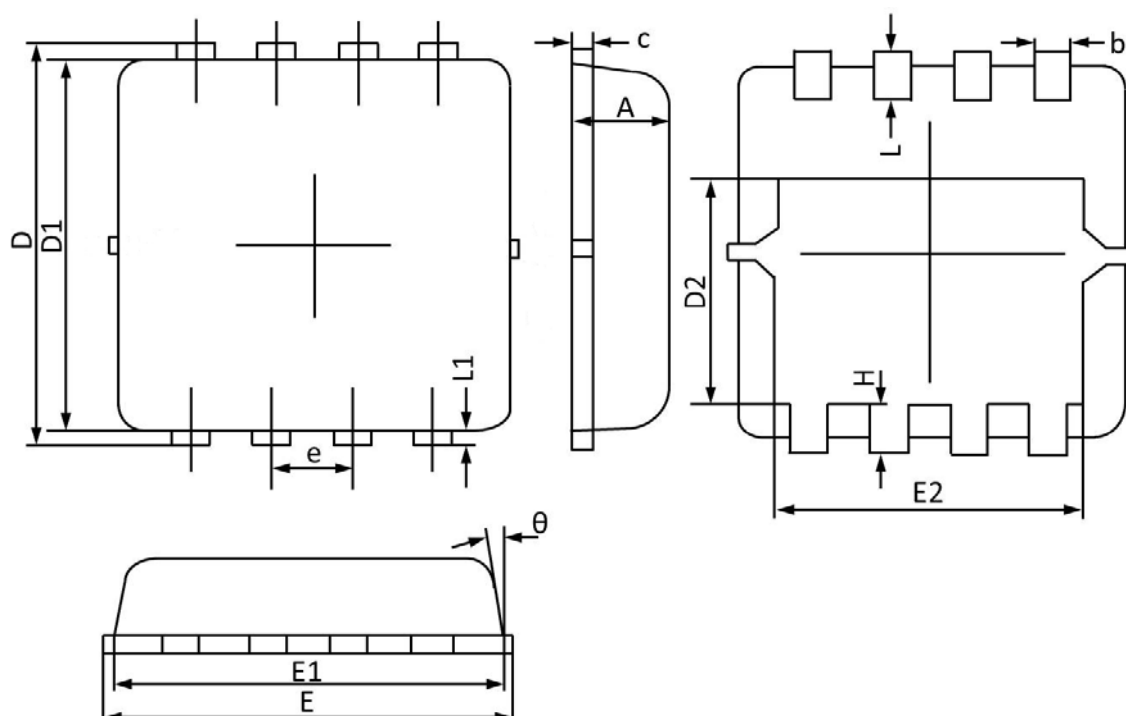


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM30N40AE-R	30N40A	PDFN3.3x3.3-8	Tape&Reel	5000/Reel

PACKAGE	MARKING
PDFN3.3x3.3-8	 AS 000 → Lot Number 30N40A 0000 → Date Code

PDFN3.3x3.3-8 PACKAGE INFORMATION


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.900	0.700	0.035	0.028
b	0.350	0.240	0.014	0.009
c	0.250	0.100	0.010	0.004
D	3.450	3.050	0.136	0.120
D1	3.200	2.900	0.126	0.114
D2	1.850	1.350	0.073	0.053
E	3.400	3.000	0.134	0.118
E1	3.250	2.900	0.128	0.114
E2	2.600	2.350	0.102	0.093
e	0.65BSC		0.026BSC	
H	0.500	0.300	0.020	0.012
L	0.500	0.300	0.020	0.012
L1	0.200	0.070	0.008	0.003
θ	12°	0°	12°	0°

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