

**Features**

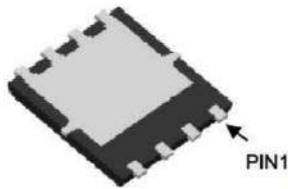
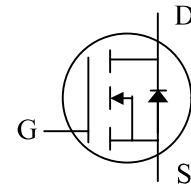
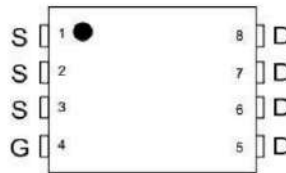
- Provide Excellent RDS(ON)
- Advanced Trench Technology
- Low Gate Charge
- Lead free product is acquired

**Application**

- Load Switch
- PWM Application
- Power management


**Product Summary**

$V_{DS}$	30	V
$R_{DS(on), Typ} @ V_{GS}=10 V$	6.0	mΩ
$I_D$	40	A


**PDFN3.3x3.3-8**

**Absolute Maximum Ratings** ( $T_C=25^{\circ}C$  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	$T_C = 25^{\circ}C$	40
		$T_C = 100^{\circ}C$	20
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	160	A
$E_{AS}$	Single Pulsed Avalanche Energy <sup>note2</sup>	39	mJ
$P_D$	Power Dissipation	$T_C = 25^{\circ}C$	12
$R_{\theta JC}$	Thermal Resistance, Junction to Case	10.4	$^{\circ}C/W$
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^{\circ}C$

**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

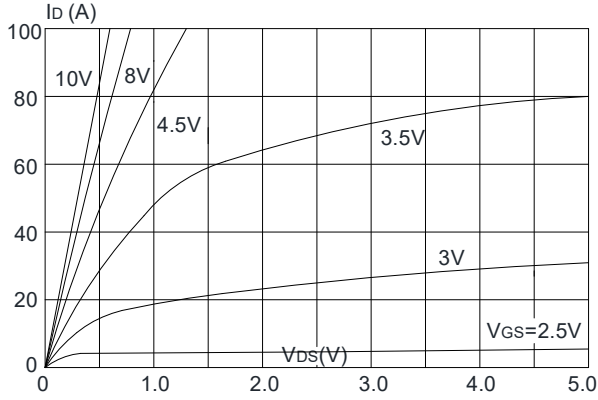
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V,$	-	-	1.0	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=10V, I_D=25A$	-	6	8	m $\Omega$
		$V_{GS}=4.5V, I_D=15A$	-	9.5	14	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	1116	-	pF
$C_{oss}$	Output Capacitance		-	187	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	152	-	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
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V,$ $I_D=15A, R_{GEN}=3\Omega,$ $V_{GS}=10V$	-	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
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	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	$V_{GS}=0V, I_S=30A$	-	-	1.2	V
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=30A, di/dt=100A/\mu s$	-	14	-	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		-	4.1	-	nC

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

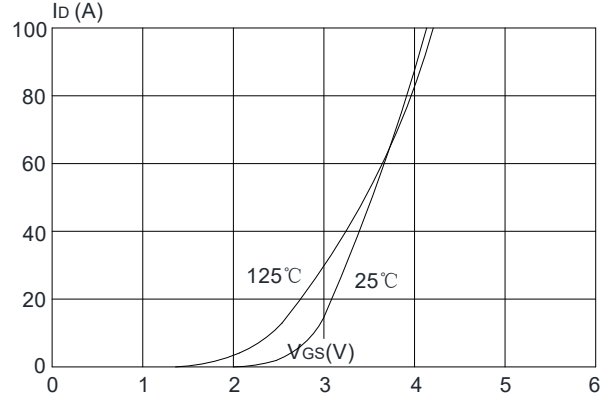
2. EAS condition:  $T_J=25^\circ\text{C}$ ,  $V_{GS}=10V$ ,  $R_G=25\Omega$ ,  $L=0.5mH$ ,  $I_{AS}=12.6A$

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

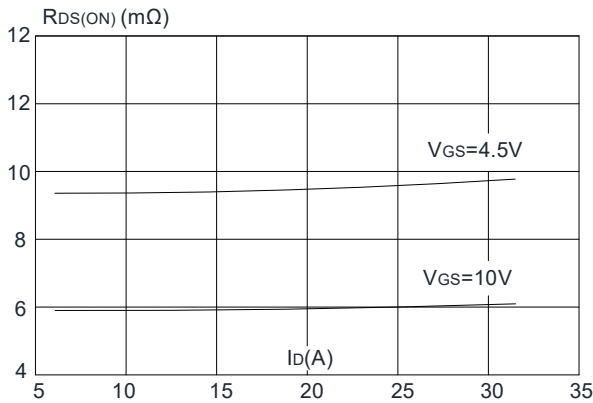
**Typical Performance Characteristics**



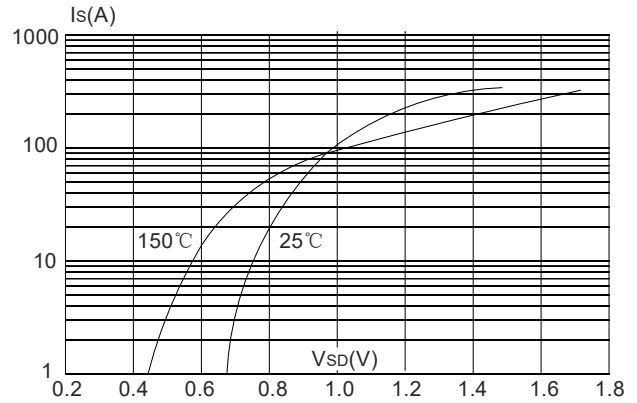
**Figure 1:** Output Characteristics



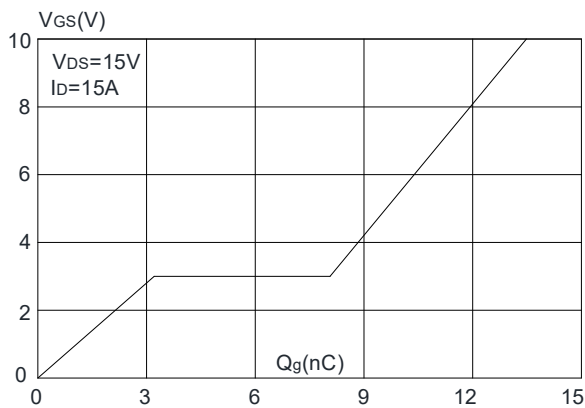
**Figure 2:** Typical Transfer Characteristics



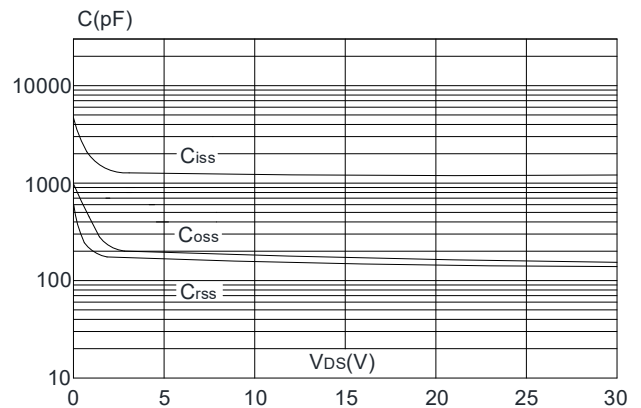
**Figure 3:** On-resistance vs. Drain Current



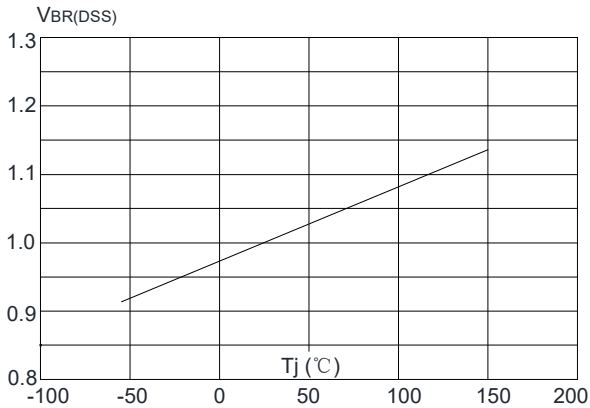
**Figure 4:** Body Diode Characteristics



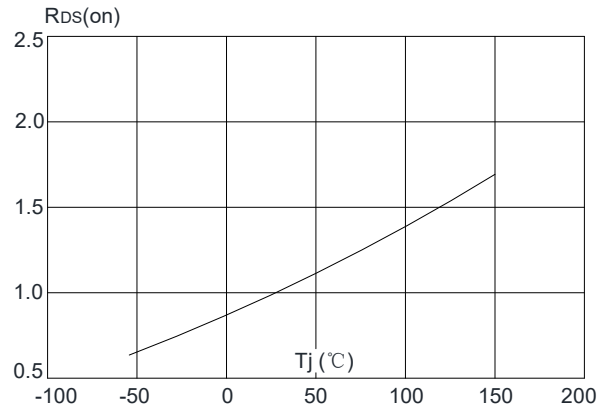
**Figure 5:** Gate Charge Characteristics



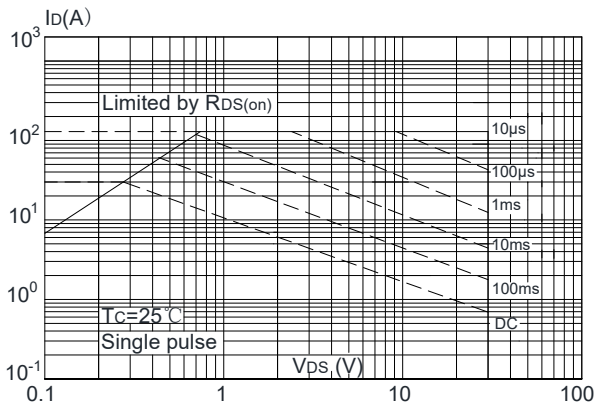
**Figure 6:** Capacitance Characteristics



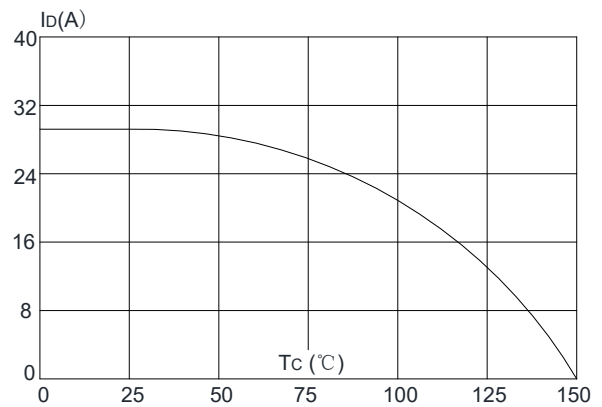
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



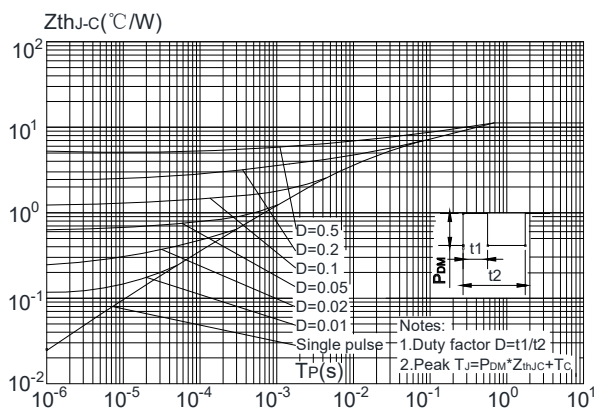
**Figure 8:** Normalized on Resistance vs. Junction Temperature



**Figure 9:** Maximum Safe Operating Area



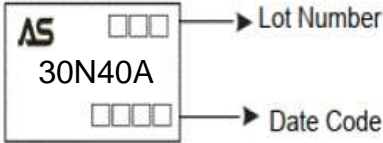
**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

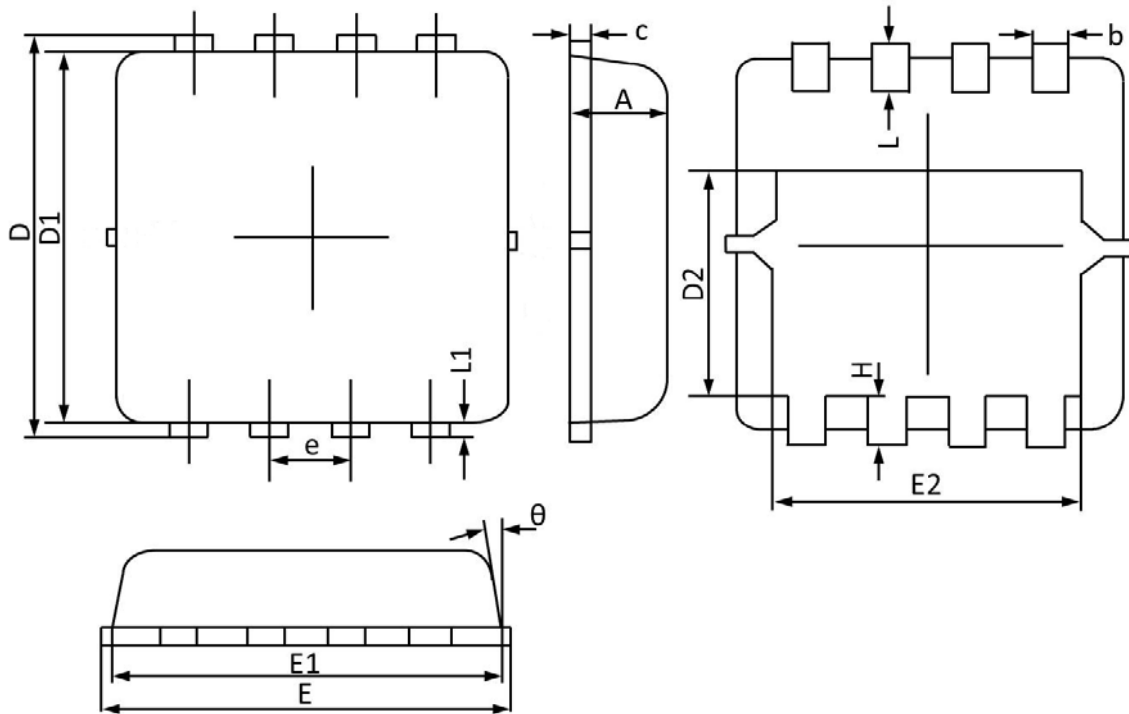


**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case

## 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	 <p>AS □□□ → Lot Number 30N40A □□□□ → Date Code</p>

**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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