



## Feature

- 100% EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

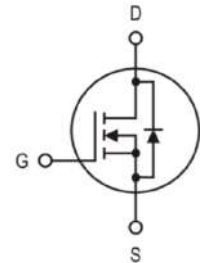
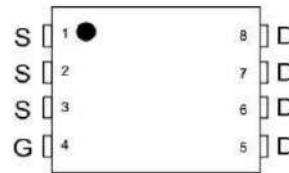
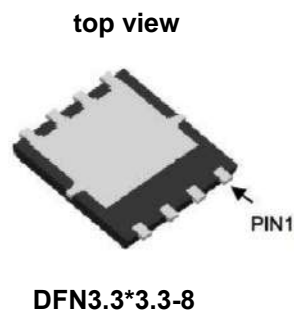
## Product Summary



$V_{DS}$	30	V
$R_{DS(on),typ} V_{GS}=10V$	4.8	m $\Omega$
$I_D$	55	A

## Application

- Power Management in Inverter System



## Maximum ratings, at $T_A=25\text{ }^\circ\text{C}$ , unless otherwise specified

Symbol	Parameter	Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage	30	V
$I_S$	Diode continuous forward current	$T_C=25^\circ\text{C}$ 55	A
$I_D$	Continuous drain current @ $V_{GS}=10V$	$T_C=25^\circ\text{C}$ 55	A
		$T_C=100^\circ\text{C}$ 35	A
$I_{DM}$	Pulse drain current tested ①	$T_A=25^\circ\text{C}$ 110	A
EAS	Avalanche energy, single pulsed ②	105	mJ
$P_D$	Maximum power dissipation	$T_C=25^\circ\text{C}$ 40	W
$V_{GS}$	Gate-Source voltage	$\pm 20$	V
MSL		Level 3	
$T_{STG}, T_J$	Storage and junction temperature range	-55 to 150	$^\circ\text{C}$

## Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JL}$	Thermal Resistance, Junction-to-Lead	40	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	70	$^\circ\text{C/W}$



## Typical Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
<b>Static Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current(T <sub>J</sub> =25°C)	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T <sub>J</sub> =125°C)	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	--	--	100	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±100	nA
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.5	2.5	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance ③	V <sub>GS</sub> =10V, I <sub>D</sub> =30A	--	4.8	6	mΩ
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance ③	V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A	--	7.5	12	mΩ
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz		3105		pF
C <sub>oss</sub>	Output Capacitance			410		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			305		pF
R <sub>g</sub>	Gate Resistance	f=1MHz	--	1.6	--	Ω
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, I <sub>D</sub> =15A, V <sub>GS</sub> =10V	--	31.6	--	nC
Q <sub>gs</sub>	Gate-Source Charge		--	6.07	--	nC
Q <sub>gd</sub>	Gate-Drain Charge		--	13.8	--	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =15V, I <sub>D</sub> =20A, R <sub>G</sub> =1.5Ω, V <sub>GS</sub> =10V	--	11.2	--	nS
t <sub>r</sub>	Turn-on Rise Time		--	49	--	nS
t <sub>d(off)</sub>	Turn-Off Delay Time		--	35	--	nS
t <sub>f</sub>	Turn-Off Fall Time		--	7.8	--	nS
<b>Source- Drain Diode Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
V <sub>SD</sub>	Forward on voltage	I <sub>SD</sub> =2A, V <sub>GS</sub> =0V	--	0.8	1.0	V
t <sub>rr</sub>	Reverse Recovery Time	T <sub>J</sub> =25°C, I <sub>sd</sub> =10A, V <sub>GS</sub> =0V	--	20	--	nS
Q <sub>rr</sub>	Reverse Recovery Charge	di/dt=500A/μs		11.5		nC

## NOTE:

- ① Repetitive rating; pulse width limited by max. junction temperature.  
 ② Limited by T<sub>Jmax</sub>, starting T<sub>J</sub> = 25°C, L = 0.1mH, R<sub>G</sub> = 25Ω, I<sub>AS</sub> = 42A, V<sub>GS</sub> = 10V. Part not recommended for use above this value  
 ③ Pulse width ≤ 300μs; duty cycle ≤ 2%.



### Typical Characteristics

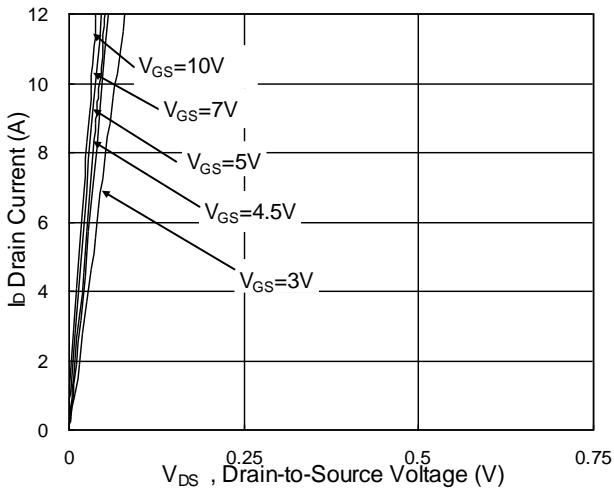


Fig.1 Typical Output Characteristics

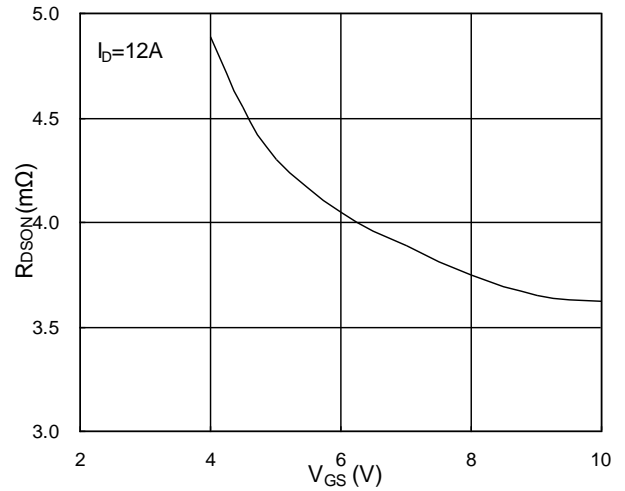


Fig.2 On-Resistance vs. G-S Voltage

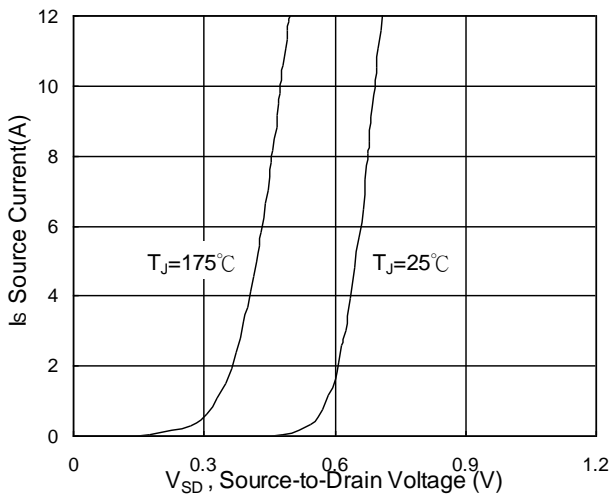


Fig.3 Forward Characteristics of Reverse

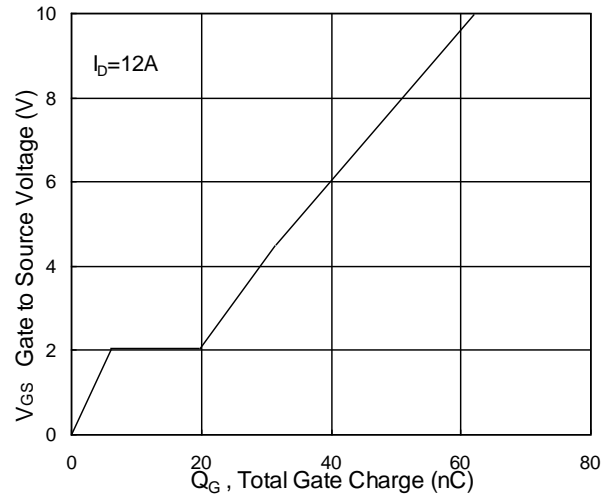


Fig.4 Gate-Charge Characteristics

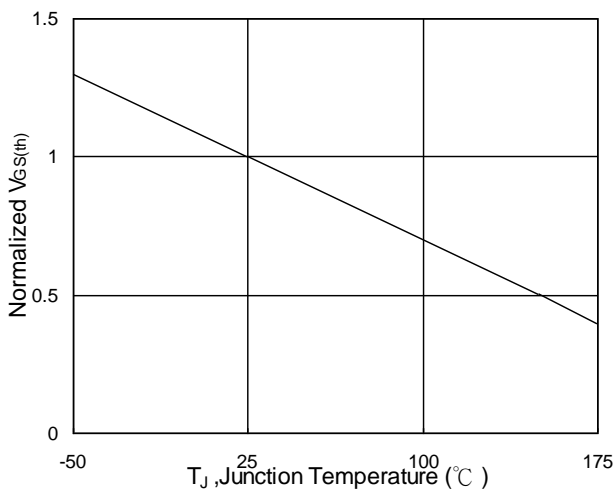


Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$

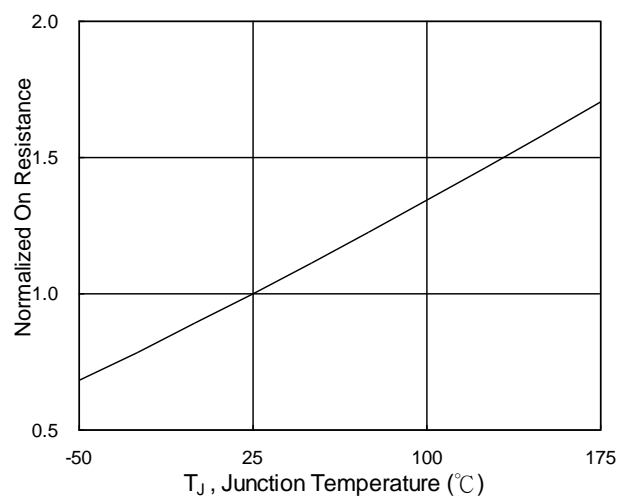


Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$

### Typical Characteristics

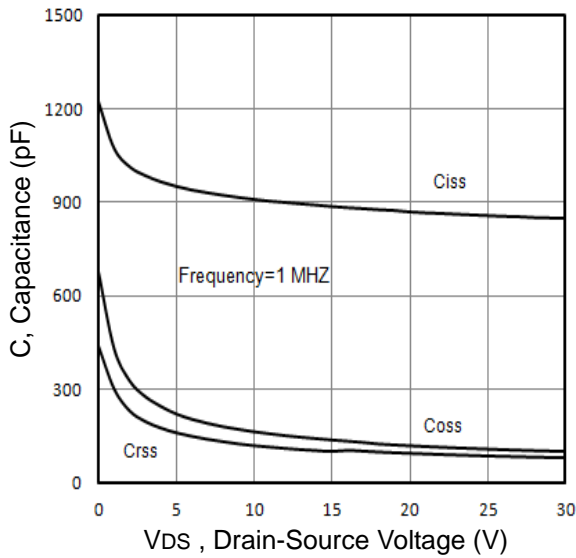


Fig7. Typical Capacitance Vs. Drain-Source Voltage

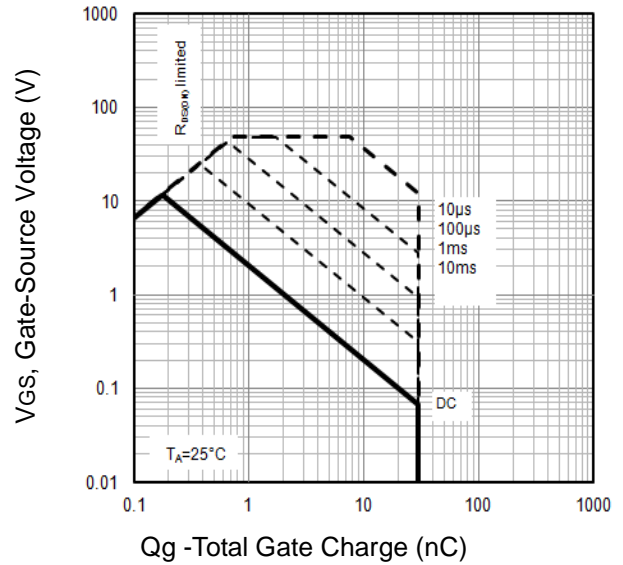
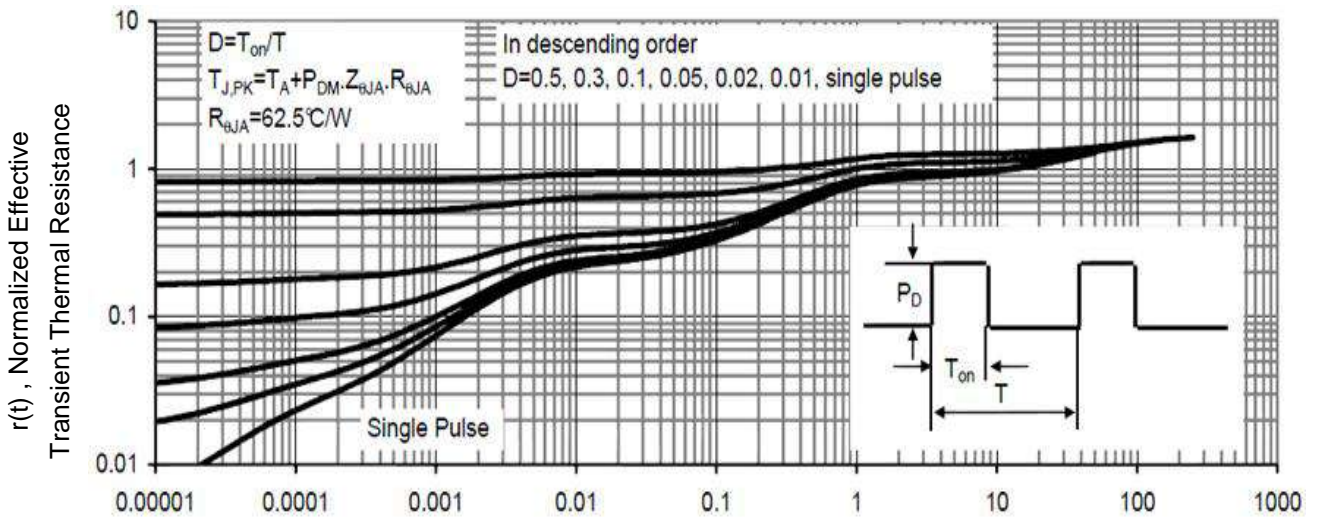


Fig8. Typical Gate Charge Vs. Gate-Source Voltage



T1, Square Wave Pulse Duration(sec)

Fig9. T1, Transient Thermal Response Curve

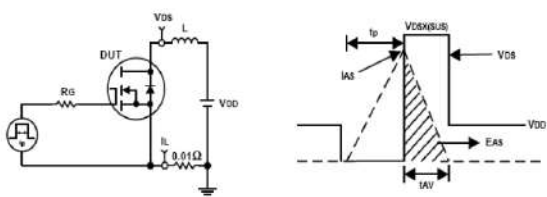


Fig10. Unclamped Inductive Test Circuit and waveforms

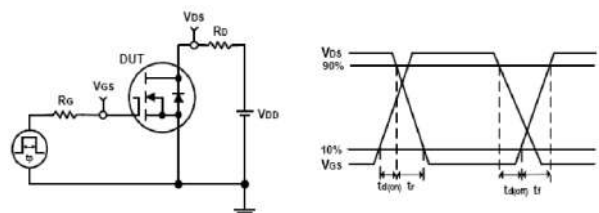
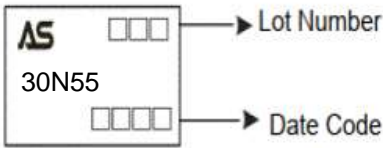


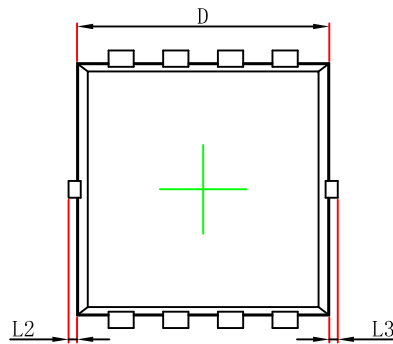
Fig11. Switching Time Test Circuit and waveforms

### Ordering and Marking Information

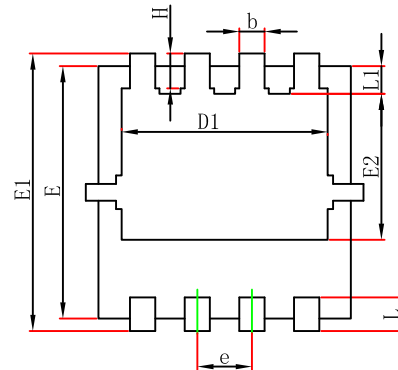
Device	Marking	Package	Packaging	Quantity
ASDM30N55E-R	30N55	DFN3.3*3.3-8	Tape&Reel	5000

PACKAGE	MARKING
DFN3.3*3.3-8	 <p>AS    □□    → Lot Number  30N55  □□□□    → Date Code</p>

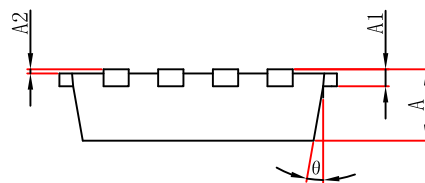
### DFN 3.3×3.3 -8 (P0.65T0.80) PACKAGE OUTLINE DIMENSIONS



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	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°

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