

Features

- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$
- 150 °C operating temperature
- Pb-free lead plating

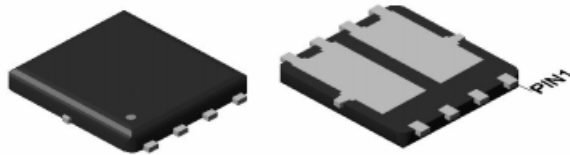
Applications

- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

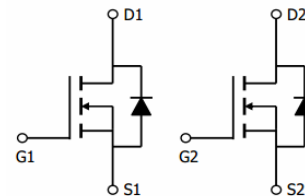
Product Summary



V_{DS}	60	V
$R_{DS(on),typ.}@V_{GS}=10V$	14	m Ω
ID	30	A



DFN5*6-8



Dual N-Channel

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	30	A
Drain Current-Continuous($T_C=100^{\circ}C$)	$I_D(100^{\circ}C)$	23.2	A
Pulsed Drain Current	I_{DM}	120	A
Maximum Power Dissipation	P_D	40	W
Derating factor		0.32	W/ $^{\circ}C$
Single pulse avalanche energy ^(Note 5)	E_{AS}	135	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}C$

Thermal Characteristic

Thermal Resistance,Junction-to-Case ^(Note 2)	$R_{\theta JC}$	3.13	$^{\circ}C/W$
Thermal Resistance,Junction-to-Ambient ^(Note1)	$R_{\theta JA}$	62	$^{\circ}C/W$

Electrical Characteristics (T_C=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	60	-		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.8	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5A	-	14	16	mΩ
		V _{GS} =4.5V, I _D =5A	-	21	24	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =15A		40	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, F=1.0MHz	-	589	-	PF
Output Capacitance	C _{oss}		-	107	-	PF
Reverse Transfer Capacitance	C _{rss}		-	5.8	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, I _D =15A V _{GS} =10V, R _G =1.6Ω	-	11	-	nS
Turn-on Rise Time	t _r		-	17	-	nS
Turn-Off Delay Time	t _{d(off)}		-	18	-	nS
Turn-Off Fall Time	t _f		-	4	-	nS
Total Gate Charge	Q _g	V _{DS} =30V, I _D =15A, V _{GS} =10V	-	21.8	-	nC
Gate-Source Charge	Q _{gs}		-	4.6		nC
Gate-Drain Charge	Q _{gd}		-	3.5		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =15A	-		1.2	V
Diode Forward Current (Note 2)	I _S		-	-	30	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = I _S	-	30	-	nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs (Note 3)	-	36	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition : T_J=25°C, V_{DD}=30V, V_G=10V, L=0.5mH, R_g=25Ω

Typical Performance Characteristics

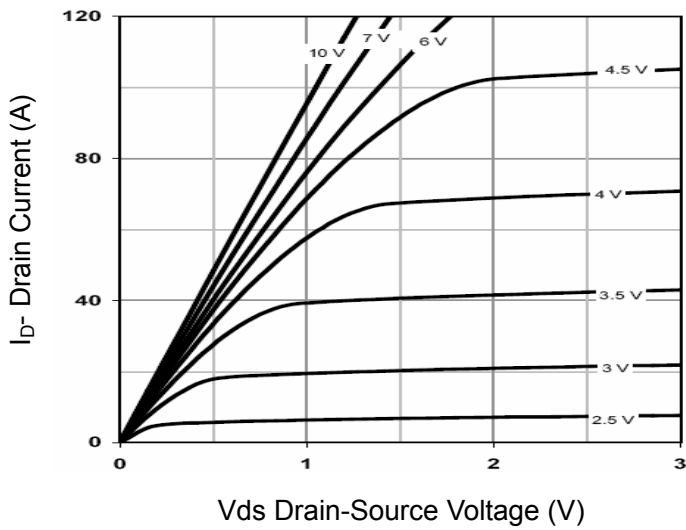


Figure 1 Output Characteristics

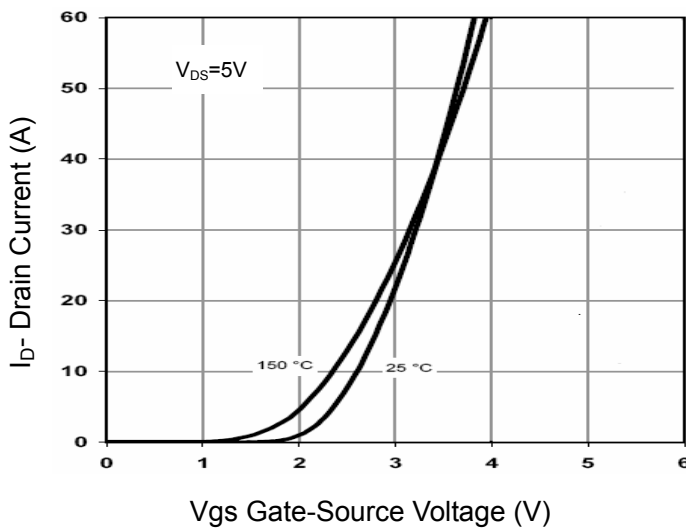


Figure 2 Transfer Characteristics

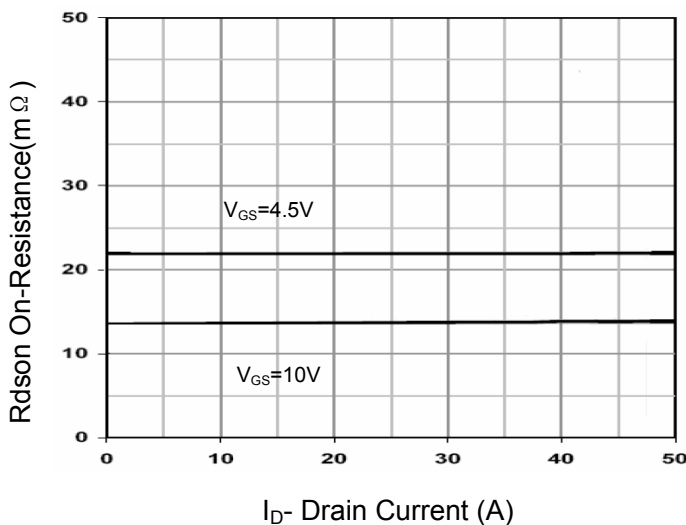


Figure 3 $R_{DS(on)}$ - Drain Current

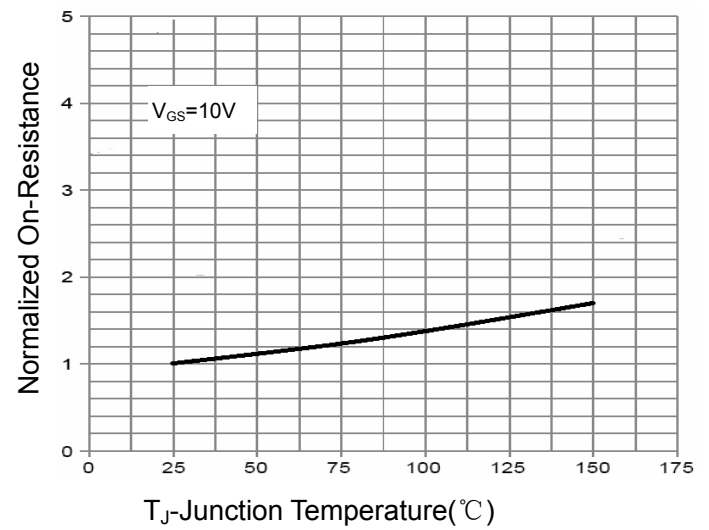


Figure 4 $R_{DS(on)}$ -Junction Temperature

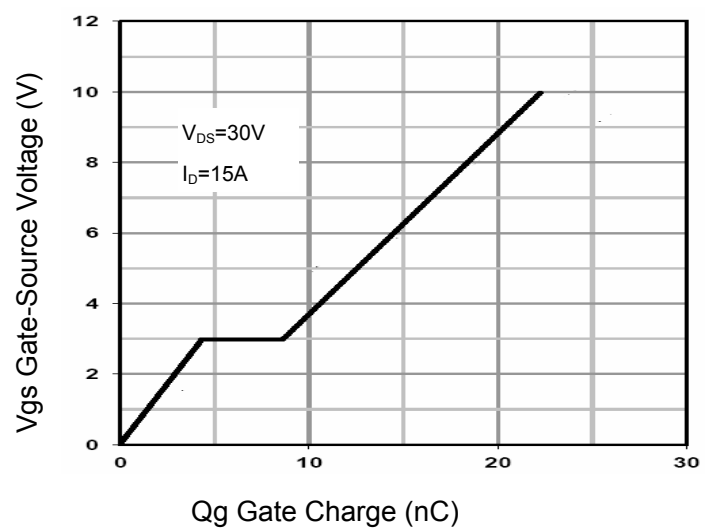


Figure 5 Gate Charge

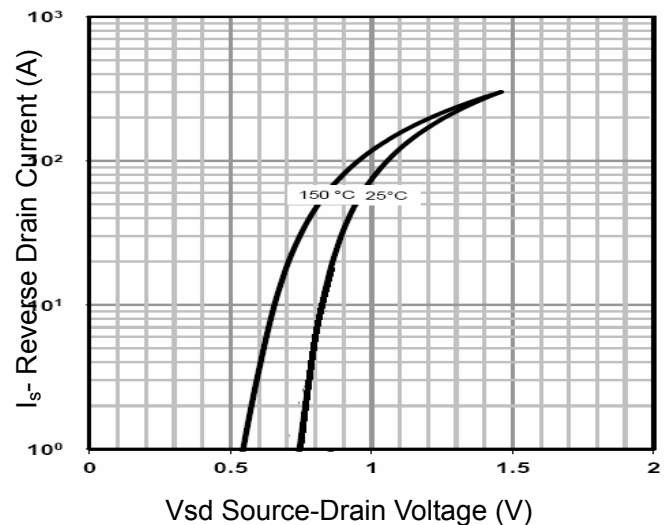
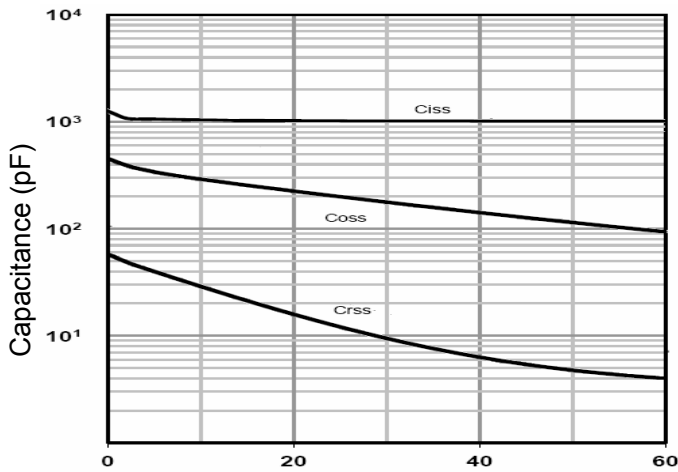
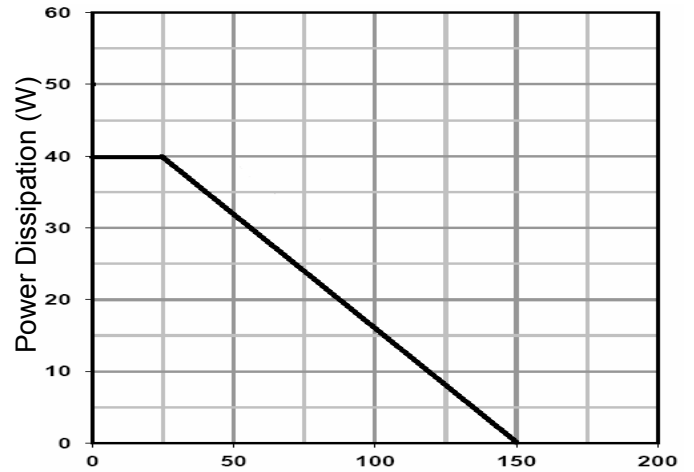


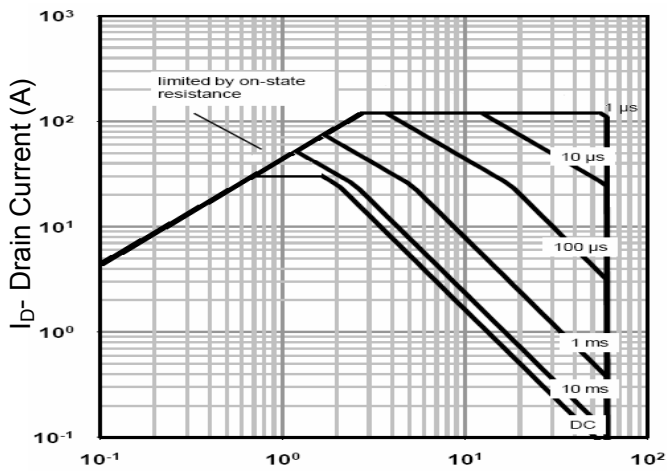
Figure 6 Source- Drain Diode Forward



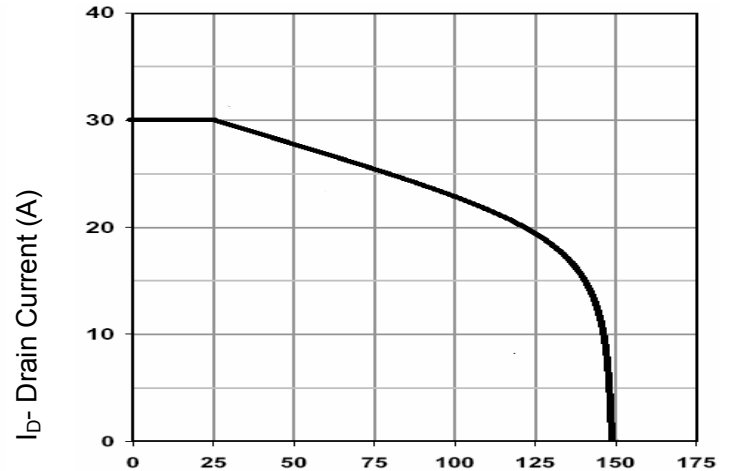
Vds Drain-Source Voltage (V)
Figure 7 Capacitance vs Vds



T_J-Junction Temperature(°C)
Figure 9 Power De-rating



Vds Drain-Source Voltage (V)
Figure 8 Safe Operation Area



T_J-Junction Temperature (°C)
Figure 10 Current De-rating

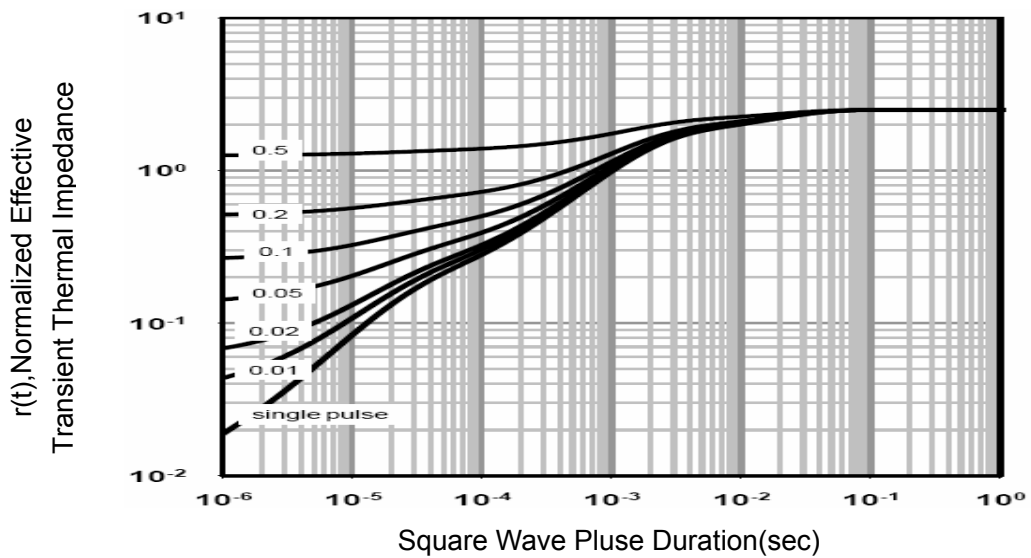
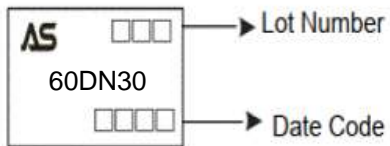
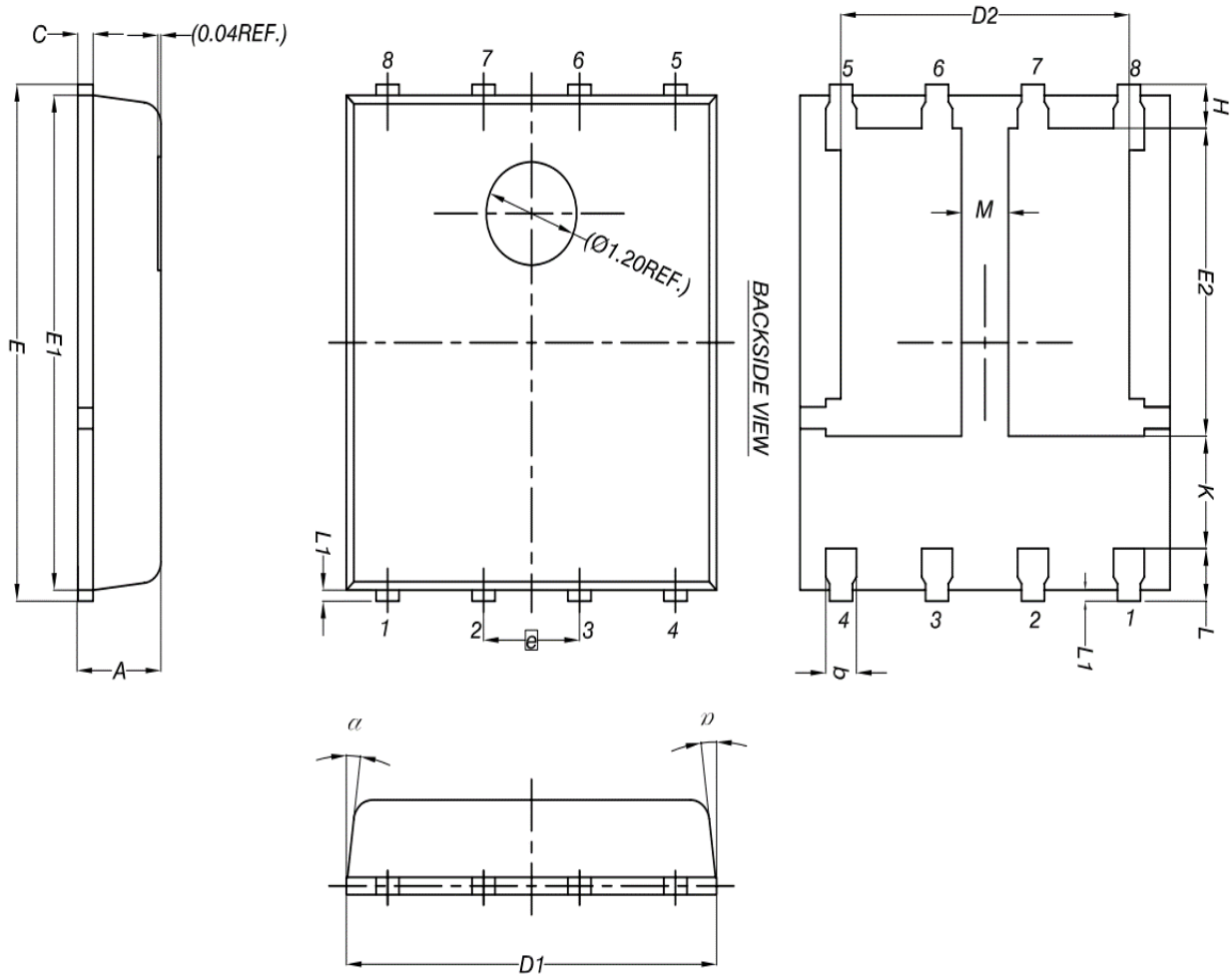


Figure 11 Normalized Maximum Transient Thermal Impedance

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM60DN30Q-R	60DN30	DFN5*6-8	Tape&Reel	4000/Reel

PACKAGE	MARKING
DFN5*6-8	 <p>AS □□□ → Lot Number 60DN30 □□□□ → Date Code</p>

Dual DFN5x6-8 Package Outline Data


Symbol	DIMENSIONS (unit : mm)		
	Min	Typ	Max
A	0.9	1	1.1
b	0.33	0.41	0.51
C	0.2	0.25	0.3
D1	4.8	4.9	5
D2	3.61	3.81	3.96
E	5.9	6	6.1
E1	5.7	5.75	5.8
E2	3.38	3.58	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.1	--	--
L	0.51	0.61	0.71
L1	0.06	0.13	0.2
M	0.5	--	--
α	0°	--	12°

Notes:

1. Refer to JEDEC MO-240 variation AA.
2. Dimensions "D1" and "E1" do NOT include mold flash protrusions or gate burrs.
3. Dimensions "D1" and "E1" include interterminal flash or protrusion. Interterminal flash or protrusion shall not exceed 0.25mm per side.

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