

## 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

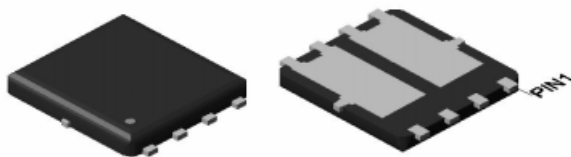
## Applications

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

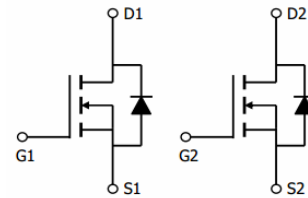
## Product Summary



$V_{DS}$	100	V
$R_{DS(on),max.}@V_{GS}=10V$	17	m $\Omega$
ID	35	A



DFN5\*6-8



Dual N-Channel

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	35	A
Drain Current-Continuous( $T_C=100^\circ\text{C}$ )	$I_D(100^\circ\text{C})$	24.8	A
Pulsed Drain Current	$I_{DM}$	140	A
Maximum Power Dissipation	$P_D$	50	W
Derating factor		0.4	W/ $^\circ\text{C}$
Single pulse avalanche energy <sup>(Note 5)</sup>	$E_{AS}$	200	mJ
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^\circ\text{C}$

## Thermal Characteristic

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.5	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$

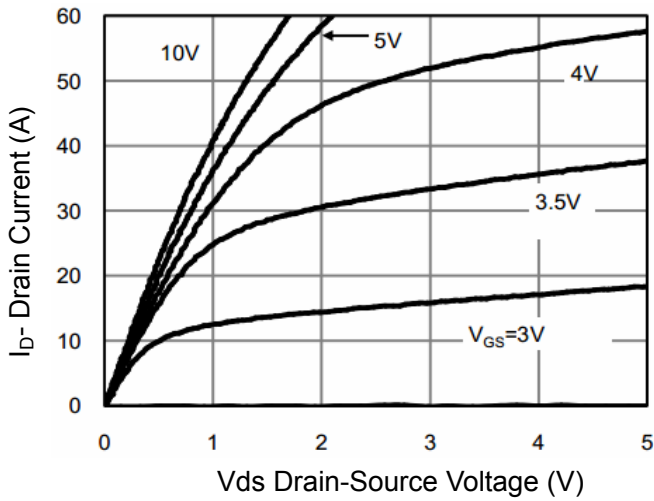
**Electrical Characteristics ( $T_C=25^{\circ}\text{C}$  unless otherwise noted)**

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100		-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b> (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.9	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	16.5	17	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$	-	20	21	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=20A$	-	35	-	S
<b>Dynamic Characteristics</b> (Note 4)						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V,$ $F=1.0MHz$	-	1080	-	PF
Output Capacitance	$C_{oss}$		-	94	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	7.4	-	PF
<b>Switching Characteristics</b> (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=50V, I_D=20A$ $V_{GS}=10V, R_G=1.6\Omega$	-	6	-	nS
Turn-on Rise Time	$t_r$		-	2	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	18	-	nS
Turn-Off Fall Time	$t_f$		-	2	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=50V, I_D=20A,$ $V_{GS}=10V$	-	26	-	nC
Gate-Source Charge	$Q_{gs}$		-	7.4	-	nC
Gate-Drain Charge	$Q_{gd}$		-	3.8	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=35A$	-		1.2	V
Diode Forward Current	$I_S$		-	-	35	A
Reverse Recovery Time	$t_{rr}$	$T_J = 25^{\circ}\text{C}, I_F = 20A$	-		26	nS
Reverse Recovery Charge	$Q_{rr}$	$di/dt = 500A/\mu s$ (Note 3)	-		98	nC

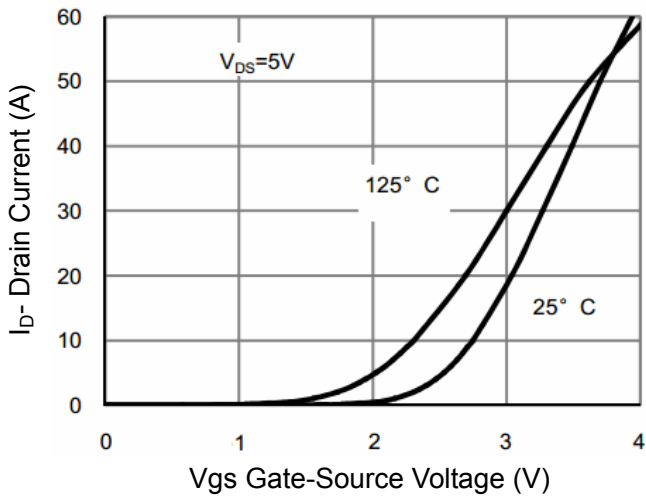
**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production
5. EAS condition :  $T_J=25^{\circ}\text{C}, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25\Omega$

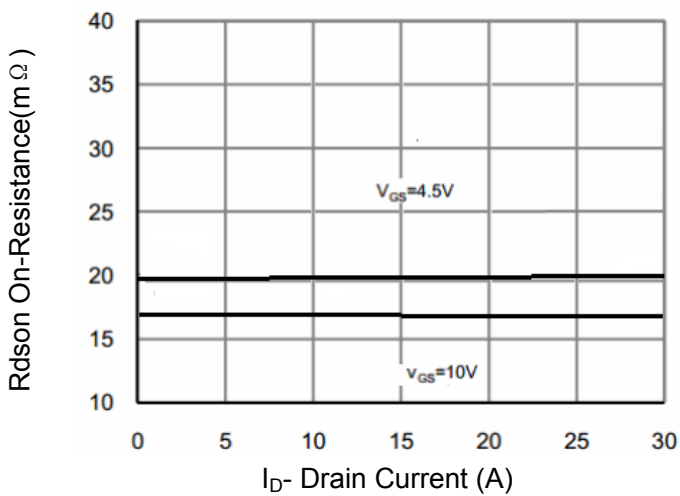
**Typical Performance Characteristics**



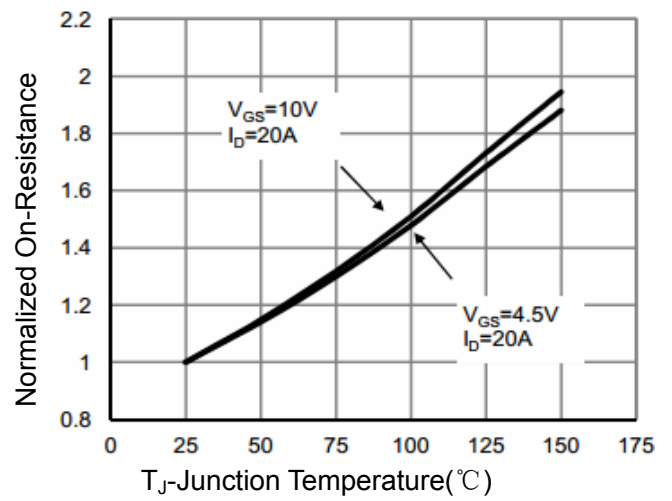
**Figure 1 Output Characteristics**



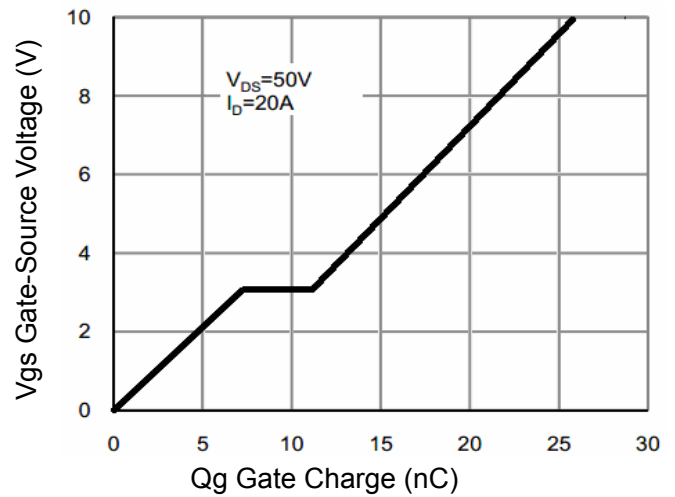
**Figure 2 Transfer Characteristics**



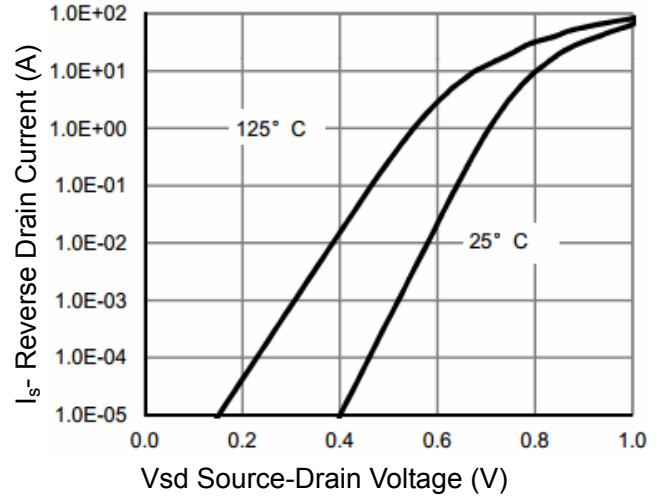
**Figure 3  $R_{DS(on)}$ - Drain Current**



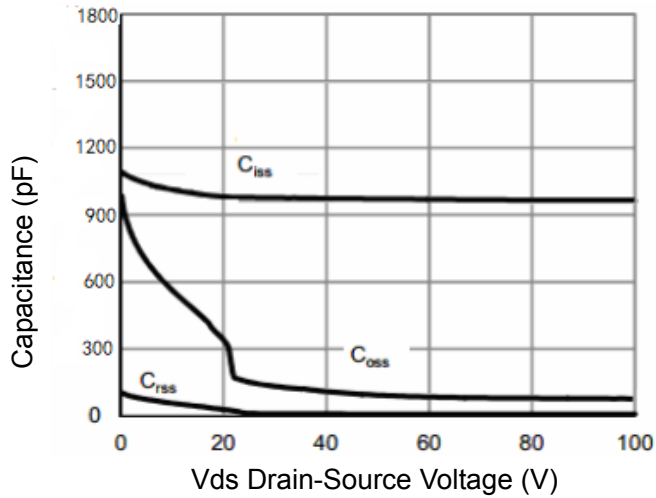
**Figure 4  $R_{DS(on)}$ -Junction Temperature**



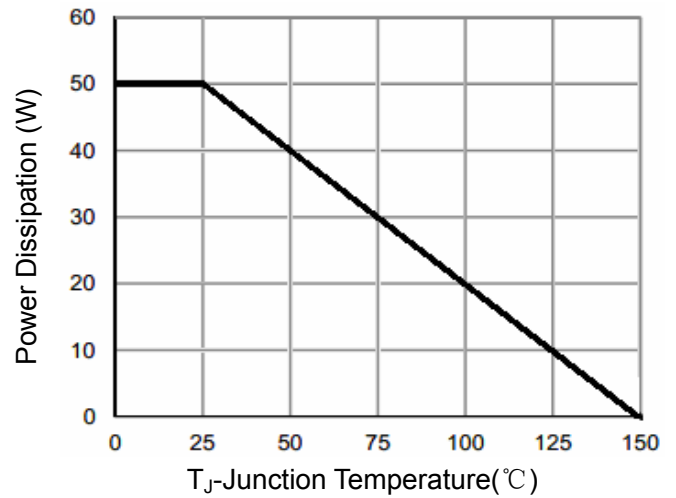
**Figure 5 Gate Charge**



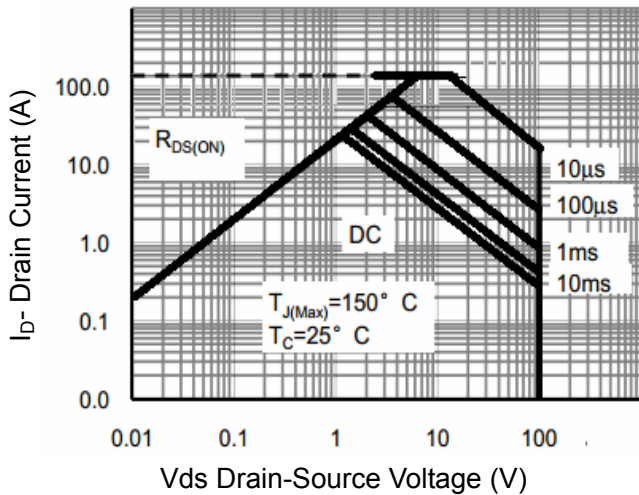
**Figure 6 Source- Drain Diode Forward**



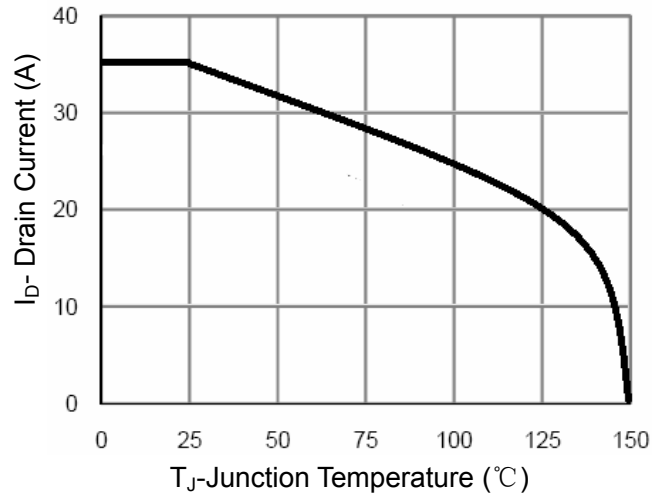
**Figure 7 Capacitance vs Vds**



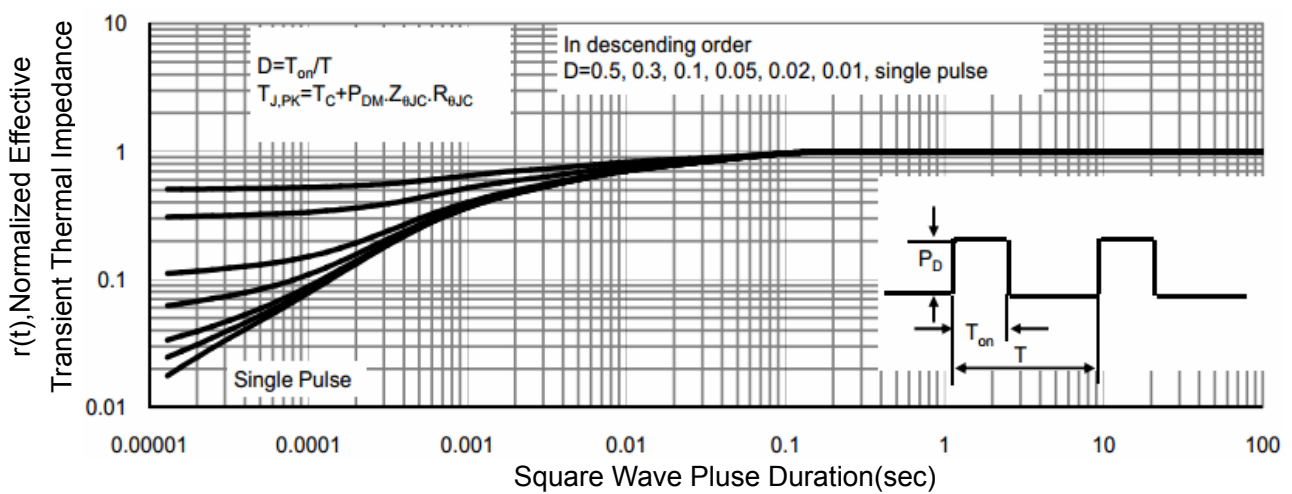
**Figure 9 Power De-rating**



**Figure 8 Safe Operation Area**



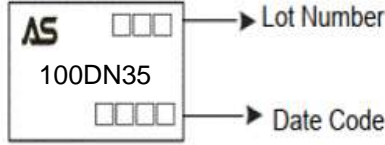
**Figure 10 Current De-rating**

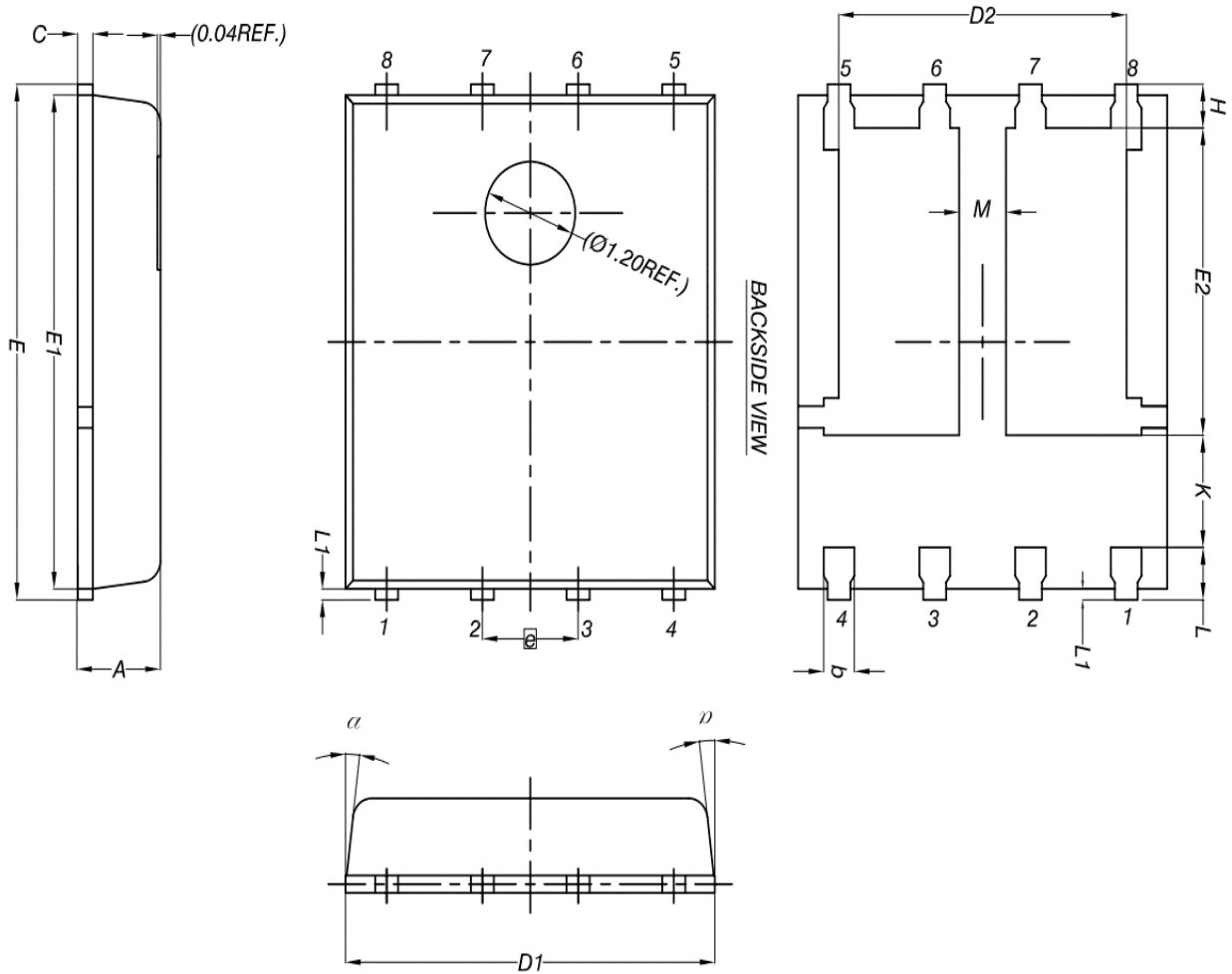


**Figure 11 Normalized Maximum Transient Thermal Impedance**

### Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM100DN35Q-R	100DN35	DFN5*6-8	Tape&Reel	4000/Reel

PACKAGE	MARKING
DFN5*6-8	 <p>The diagram shows a rectangular marking area on a component. It contains the 'AS' logo in the top left, the part number '100DN35' in the center, and two sets of empty boxes for identification. The top set of three boxes is labeled 'Lot Number' with an arrow pointing to it. The bottom set of four boxes is labeled 'Date Code' with an arrow pointing to it.</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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