

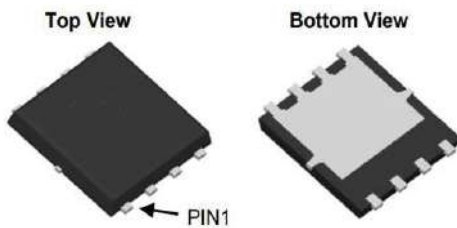
General Description

- 20V /100A Single N Power MOSFET
- Very low on-resistance $R_{DS(on)}$ @ $V_{GS}=4.5V$
- Pb-free lead plating; RoHS compliant

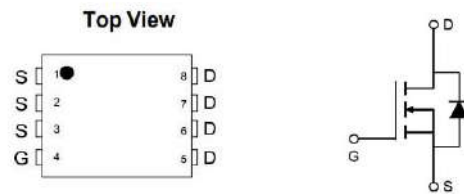
Product Summary



V_{DS}	20	V
$R_{DS(on),TYP} @ V_{GS}=10V$	1.3	m Ω
I_D	100	A



DFN5x6-8



Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	20	$\pm V$
Continuous Drain Current I_D	$T_A=25^\circ C$	I_D	100	A
	$T_A=70^\circ C$		115	
Pulsed Drain Current I_{DM}			400	
Avalanche Current I_{AR}			48	
Repetitive avalanche energy $L=0.1mH$		E_{AR}	110.4	mJ
Power Dissipation P_D	$T_A=25^\circ C$	P_D	83	W
	$T_A=70^\circ C$		33*	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$

Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient $R_{\theta JA}$	$t \leq 10s$	$R_{\theta JA}$	6	9	$^\circ C/W$
Maximum Junction-to-Ambient $R_{\theta JA}$	Steady State		12	14	$^\circ C/W$
Maximum Junction-to-Lead $R_{\theta JL}$	Steady State	$R_{\theta JL}$	3	5	$^\circ C/W$

STATIC PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$I_D = 250\mu A, V_{GS} = 0V$	20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	μA
I_{GSS}	Gate-Body leakage current	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS} I_D = 250\mu A$	1	2.0	2.5	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=20A$		1.3	3.0	m Ω
		$V_{GS}=4.5V, I_D=20A$		1.7	4.0	
g_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=20A$		70		S
V_{SD}	Diode Forward Voltage	$I_S=1A, V_{GS}=245V$		0.72	1	V
I_S	Maximum Body-Diode Continuous Current				150	A

DYNAMIC PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=15V, f=1MHz$		6384		pF
C_{oss}	Output Capacitance			2470		pF
C_{rss}	Reverse Transfer Capacitance			325		pF
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$			5.15	Ω

SWITCHING PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
$Q_g(10V)$	Total Gate Charge	$V_{GS}=10V, V_{DS}=15V, I_D=20A$		25		nC
$Q_g(4.5V)$	Total Gate Charge			12.5		
Q_{gs}	Gate Source Charge			7.21		
Q_{gd}	Gate Drain Charge			10.3		
$t_{D(on)}$	Turn-On DelayTime	$V_{GS}=10V, V_{DS}=15V, R_L=0.75\Omega, R_{GEN}=3\Omega$		11		ns
t_r	Turn-On Rise Time			8.8		
$t_{D(off)}$	Turn-Off DelayTime			30.8		
t_f	Turn-Off Fall Time			9.9		
t_{rr}	Body Diode Reverse Recovery Time	$I_F=-8A, di/dt=500A/\mu s$		22		ns
Q_{rr}	Body Diode Reverse Recovery Charge	$I_F=18A, di/dt=500A/\mu s$		58		nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

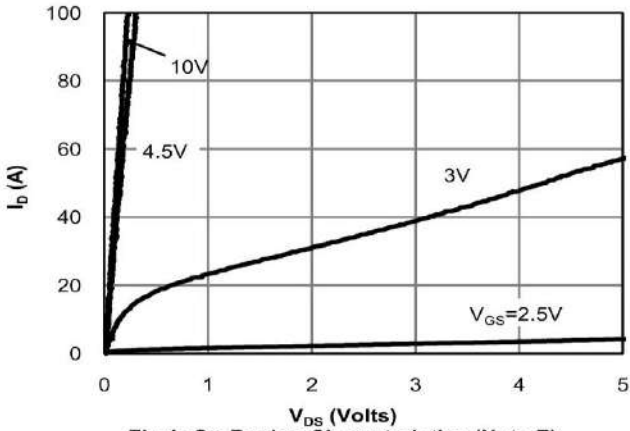


Figure 1: On-Region Characteristics (Note E)

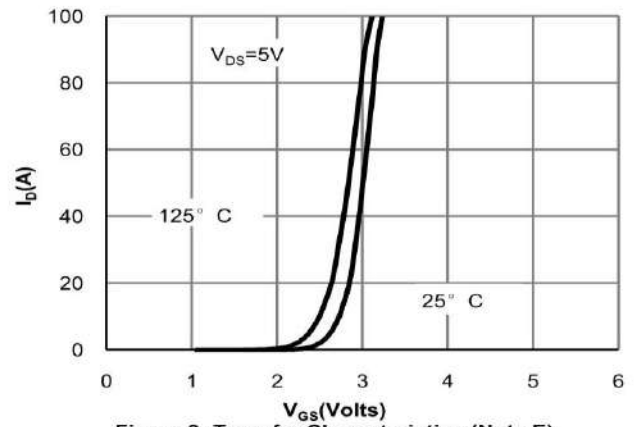


Figure 2: Transfer Characteristics (Note E)

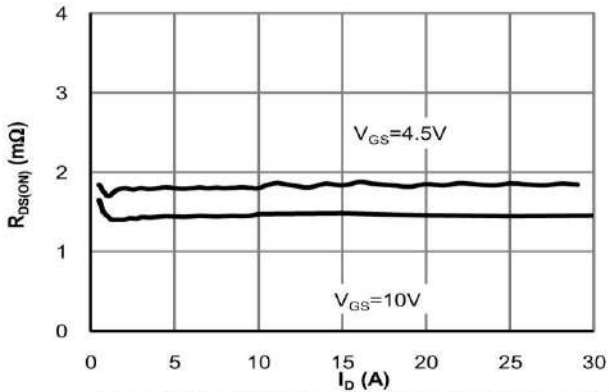


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

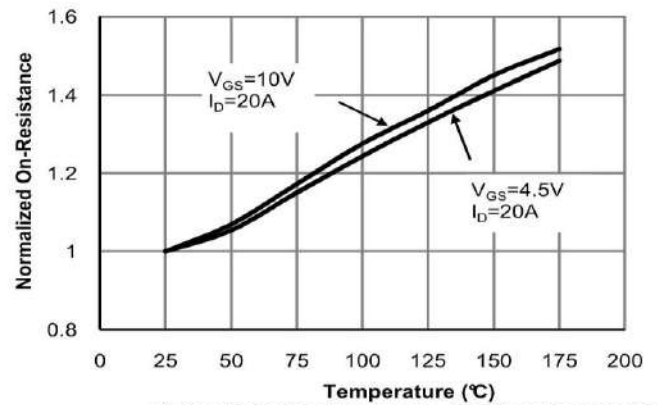


Figure 4: On-Resistance vs. Junction Temperature (Note E)

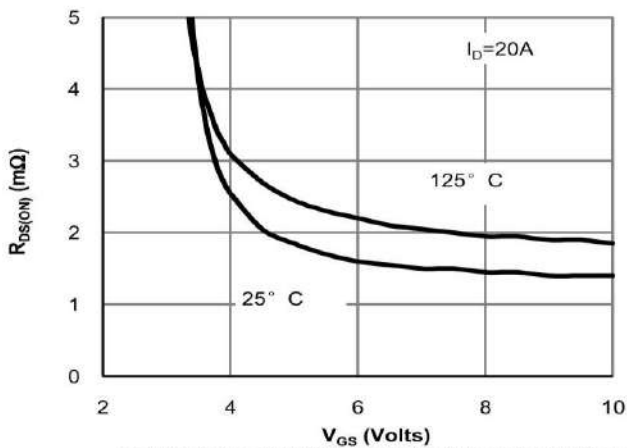


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

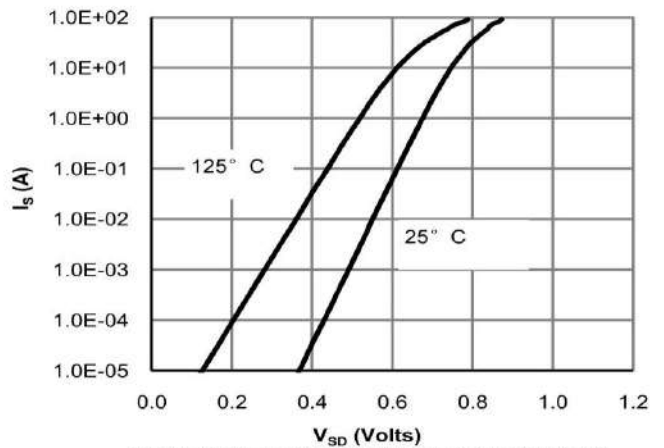


Figure 6: Body-Diode Characteristics (Note E)



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

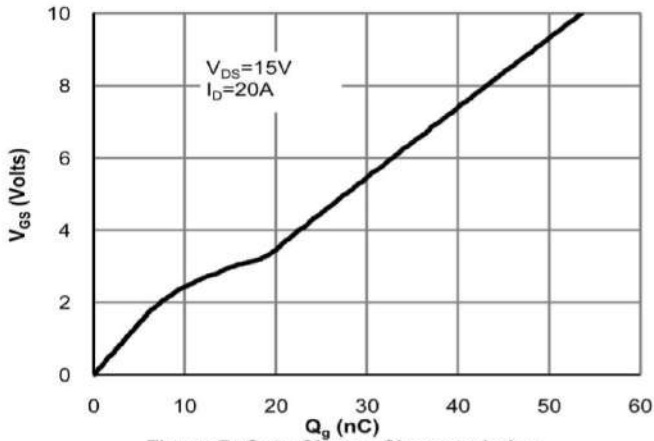


Figure 7: Gate-Charge Characteristics

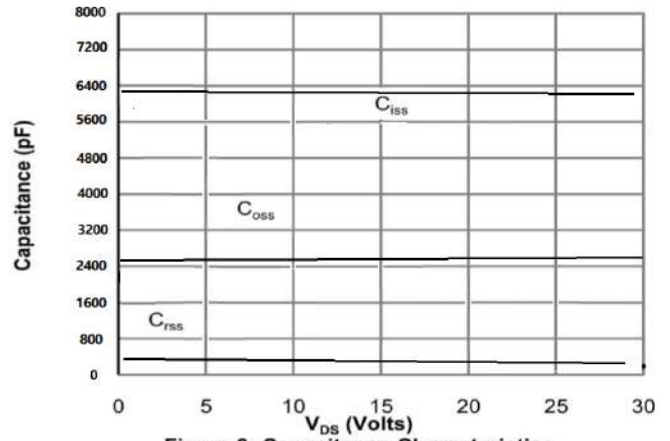


Figure 8: Capacitance Characteristics

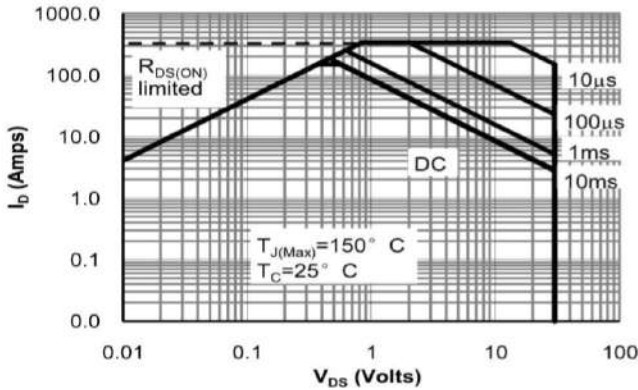


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

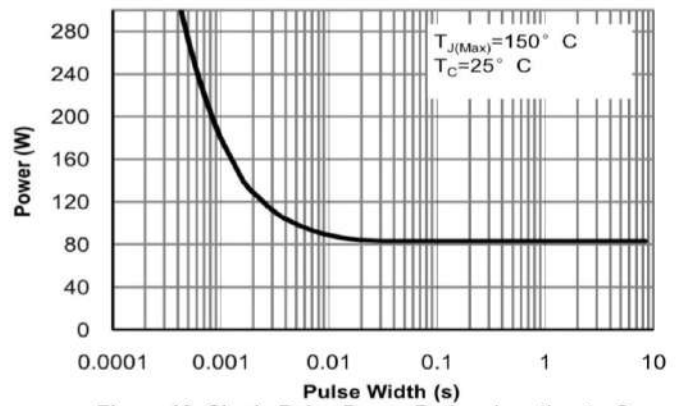


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

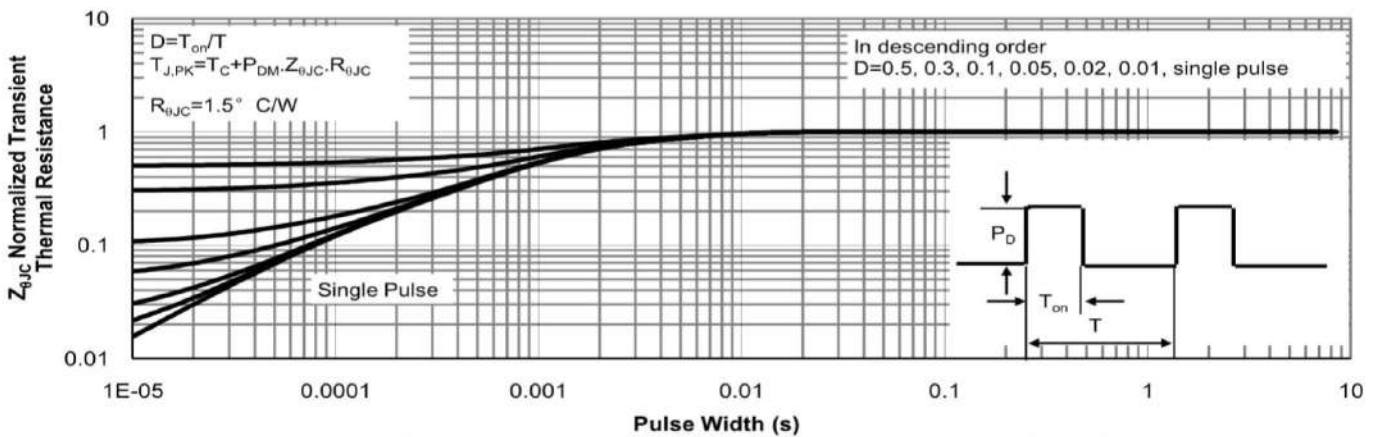
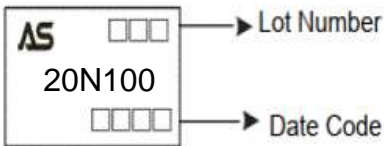


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)



Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM20N100Q-R	20N100	DFN5*6-8	Tape&Reel	4000/Reel

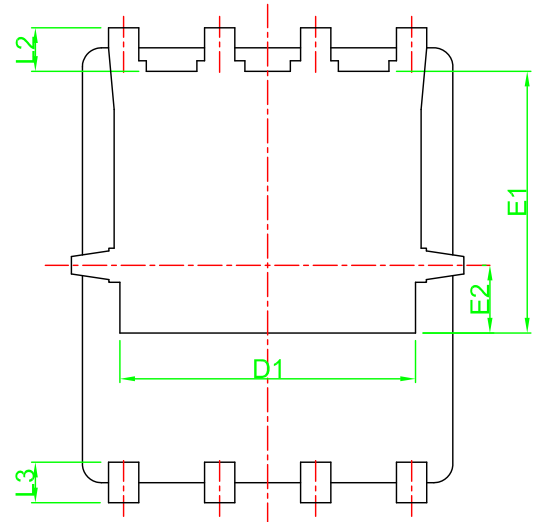
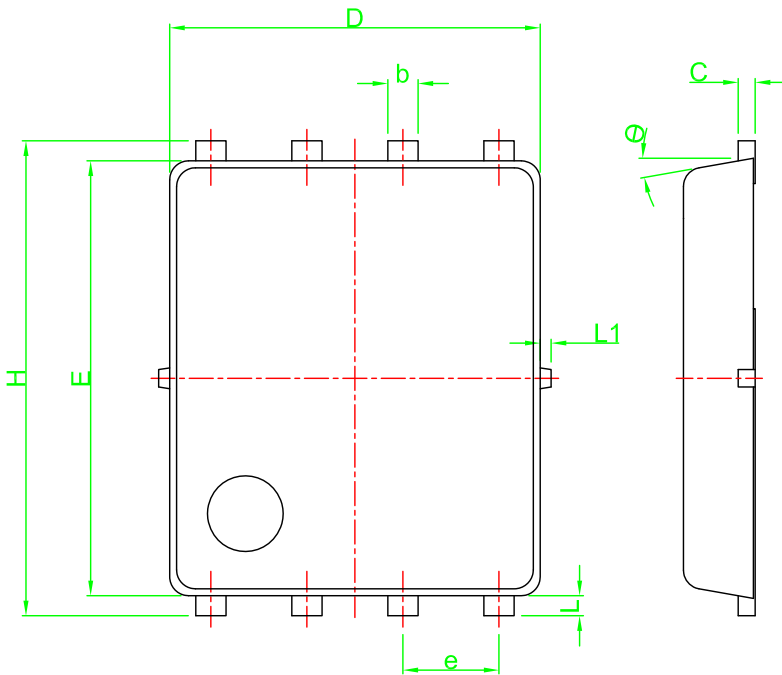
PACKAGE	MARKING
DFN5*6-8	



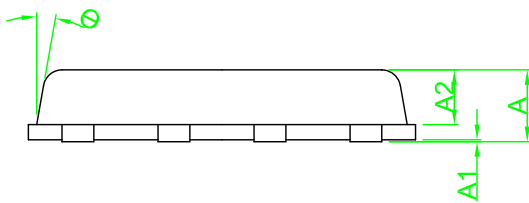
ASCENDSEMI

ASDM20N100Q

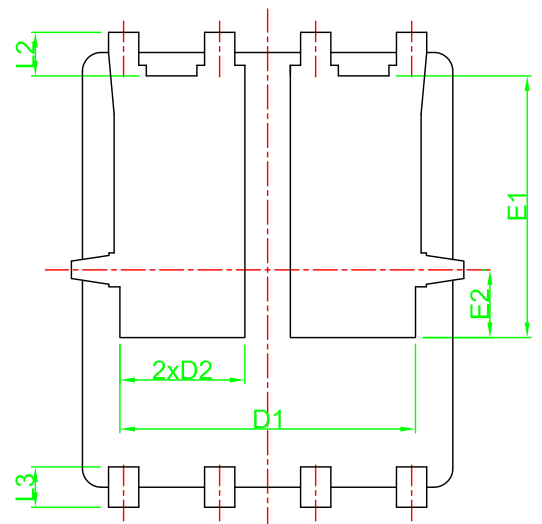
20V N-Channel MOSFET



TYPE I



DFN5*6-8



TYPE II

Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.85	1.00	0.033	0.039
A1	0.01	0.05	0.000	0.002
A2	0.69	0.75	0.027	0.030
b	0.40	0.45	0.016	0.018
C	0.20	0.30	0.008	0.012
D	4.80	4.95	0.189	0.195
D1	3.91	4.06	0.154	0.160
D2	1.60	1.80	0.063	0.071
e	1.27 TYP		0.05 TYP	
E	5.65	5.80	0.222	0.228
E1	3.46	3.50	0.136	0.138
E2	0.80	0.95	0.031	0.037
L	0.15	0.3	0.006	0.012
L1	0.08	0.15	0.003	0.006
L2	0.58	0.73	0.023	0.029
L3	0.45	0.60	0.018	0.024
H	6.15	6.28	0.242	0.247
θ	8°	12°	8°	12°

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