



General Features

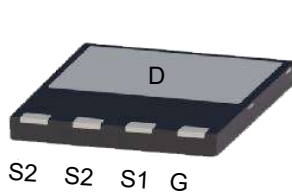
- Very low FOM $R_{DS(on)} \times Q_g$
- 100% avalanche tested
- Easy to use/drive
- RoHS compliant
- Excellent package for good heat dissipation

Application

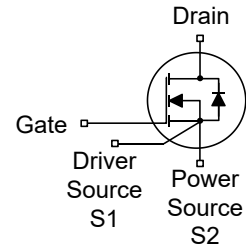
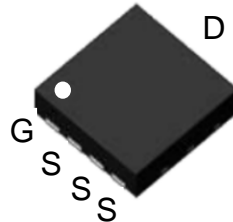
- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- Charger

Product Summary

V_{DS}	650	V
$R_{DS(on),TYP} @ V_{GS}=10V$	159	mΩ
I_D	21	A



DFN 8*8



Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM65S180NTE-R	65S180N	DFN8*8	Tape&Reel	3000

Key Performance Parameters

Parameter	Value	Unit
$V_{DS} @ T_{j,max}$	700	V
$R_{DS(on),max}$	0.18	Ω
$Q_{g,typ}$	32.9	nC
I_D	21	A
$I_{D,pulse}$	63	A
$E_{OSS} @ 400V$	4.14	μJ
Body Diode di_F/dt	500	A/μs

Absolute Maximum Ratings $T_C = 25^\circ\text{C}$, unless otherwise noted			
Parameter	Symbol	Value	Unit
Drain-Source voltage($V_{GS}=0V$)	V_{DS}	650	V
Continuous Drain Current ¹⁾	I_D	$T_C = 25^\circ\text{C}$	21
		$T_C = 100^\circ\text{C}$	12.6
Pulsed Drain Current ²⁾	$I_{D,pulse}$	63	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulse Avalanche Energy	E_{AS}	497	mJ
Repetitive Avalanche Energy	E_{AR}	0.75	mJ
Avalanche Current	I_{AR}	4.1	A
MOSFET dv/dt Ruggedness, $V_{DS} = 0 \dots 480V$	dv/dt	50	V/ns
Power Dissipation For DFN 8*8	P_D	176	W
Continuous Diode Forward Current	I_S	17.9	A
Diode Pulsed Current ²⁾	$I_{S,pulse}$	63	
Reverse Diode dv/dt ³⁾	dv/dt	15	V/ns
Maximum Diode Commutation Speed	di_f/dt	500	A/ μs
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	$^\circ\text{C}$

Thermal Resistance For DFN 8*8			
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	0.71	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62	

Notes

- 1) Limited by maximum junction temperature.
- 2) Repetitive Rating: Pulse width limited by maximum junction temperature.
- 3) Identical low side and high side switch with identical R_G .

Electrical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	650	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 650V$ $V_{GS} = 0V, T_J = 25^\circ\text{C}$	--	--	1	μA
		$V_{DS} = 650V$, $V_{GS} = 0V, T_J = 150^\circ\text{C}$	--	--	100	
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 30V$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	3.5	4.5	V
Drain-Source On-State-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 10.5A$	--	0.159	0.180	Ω
Gate Resistance	R_G	$f = 1.0\text{MHz}$ open drain	--	2.5	--	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS} = 0V$, $V_{DS} = 100V$ $f = 1.0\text{MHz}$	--	1960	--	pF
Output Capacitance	C_{oss}		--	66	--	
Reverse Transfer Capacitance	C_{rss}		--	2	--	
Total Gate Charge	Q_g	$V_{DD} = 520V, I_D = 21A$ $V_{GS} = 10V$	--	32.9	--	nC
Gate-Source Charge	Q_{gs}		--	9.9	--	
Gate-Drain Charge	Q_{gd}		--	9.8	--	
Gate Plateau Voltage	$V_{plateau}$		--	5.67	--	V
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 400V, I_D = 21A$ $R_G = 15\Omega, V_{GS} = 10V$	--	13	--	ns
Turn-on Rise Time	t_r		--	13	--	
Turn-off Delay Time	$t_{d(off)}$		--	96	--	
Turn-off Fall Time	t_f		--	8	--	
Drain-Source Body Diode Characteristics						
Body Diode Forward Voltage	V_{SD}	$T_J = 25^\circ\text{C}, I_{SD} = 10.5A$, $V_{GS} = 0V$	--	0.7	1.2	V
Reverse Recovery Time	t_{rr}	$V_R = 400V$ $I_F = 10.5A, di_F/dt = 100A/\mu s$	--	300	--	ns
Reverse Recovery Charge	Q_{rr}		--	3.3	--	μC
Peak Reverse Recovery Current	I_{rrm}		--	22	--	A

Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Transient Thermal Impedance For DFN 8*8

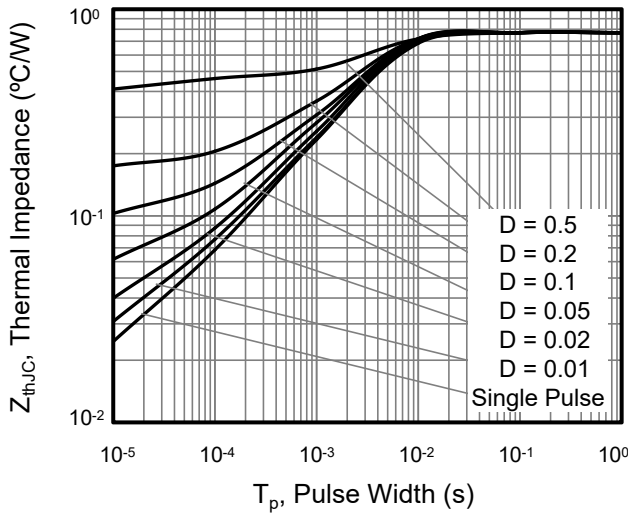


Figure 2. Safe Operation Area For DFN 8*8

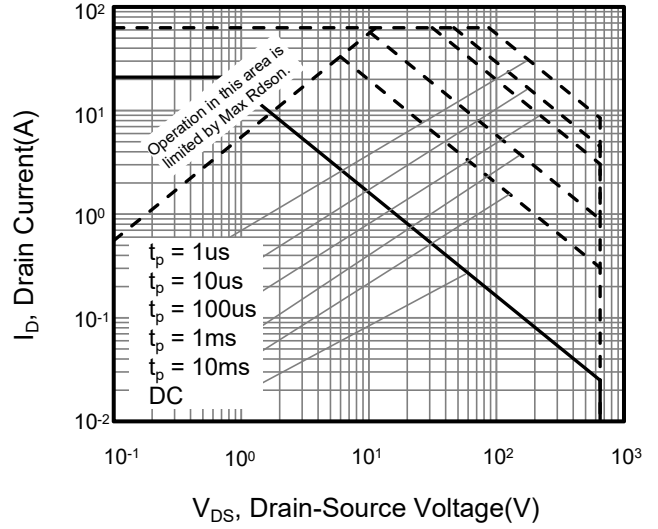


Figure 3. Output Characteristics

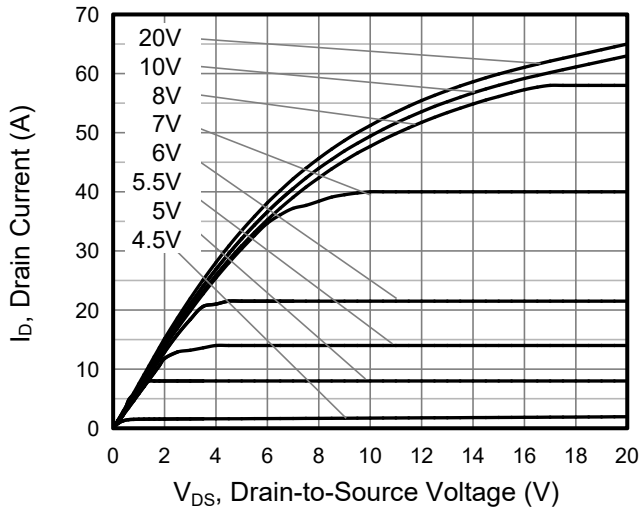


Figure 4. Transfer Characteristics

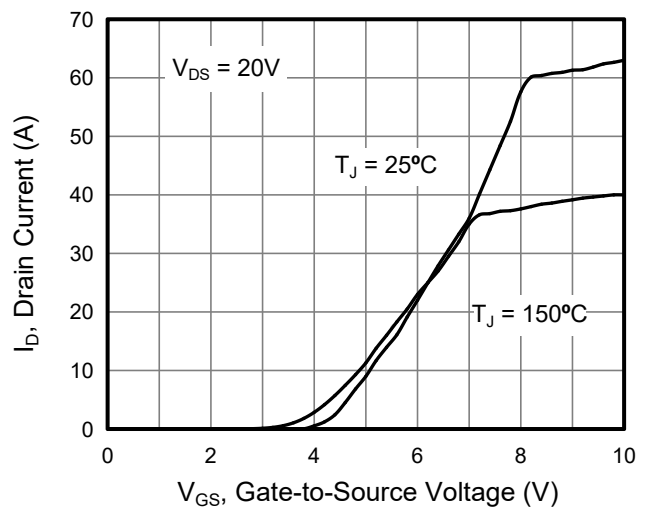


Figure 5. On-Resistance vs. Drain Current

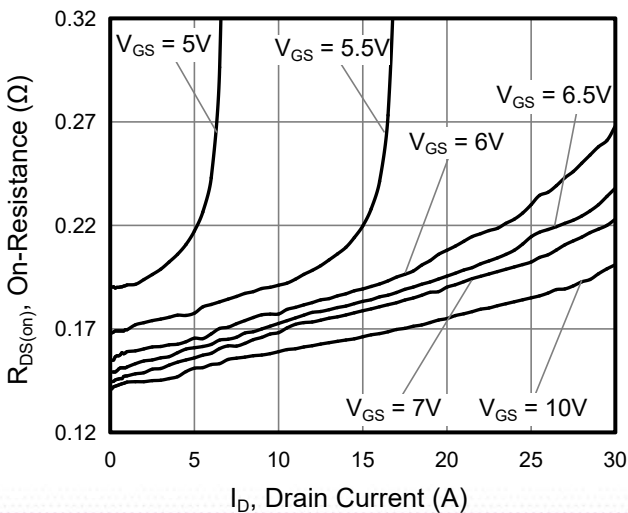
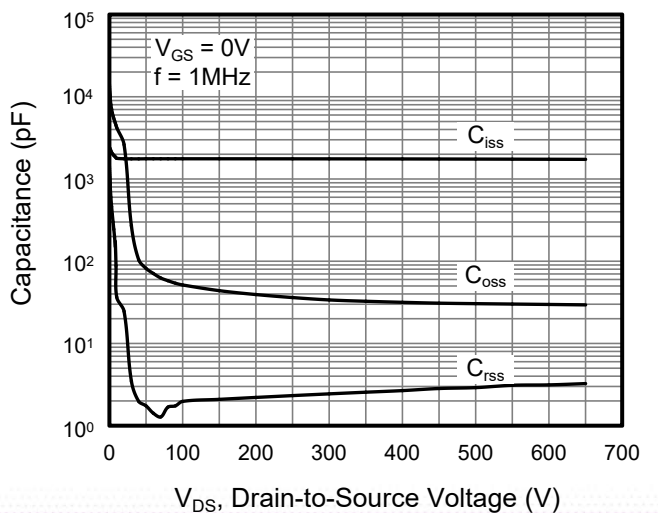


Figure 6. Capacitance



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. Gate Charge

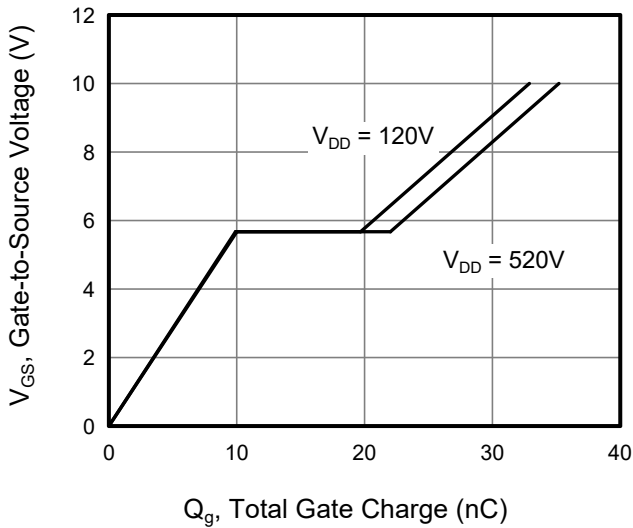


Figure 8. Body Diode Forward Voltage

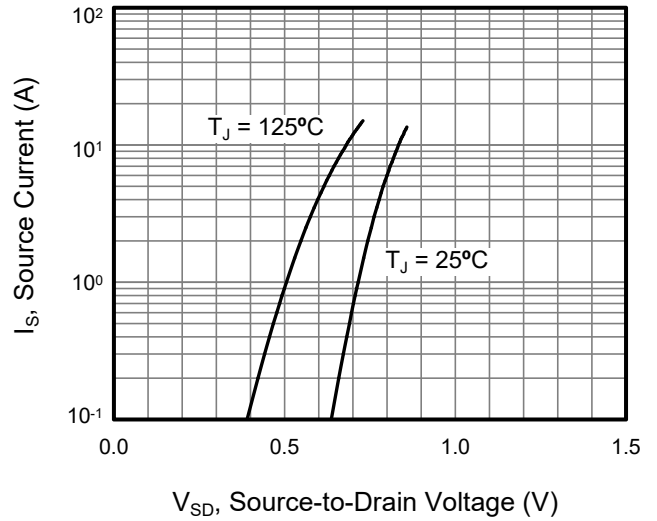


Figure 9. Typ. Coss Stored Energy

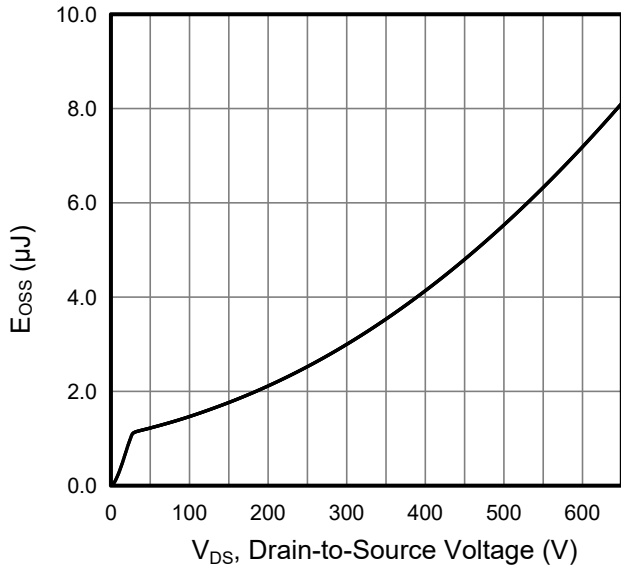


Figure 10. On-Resistance vs. Temperature

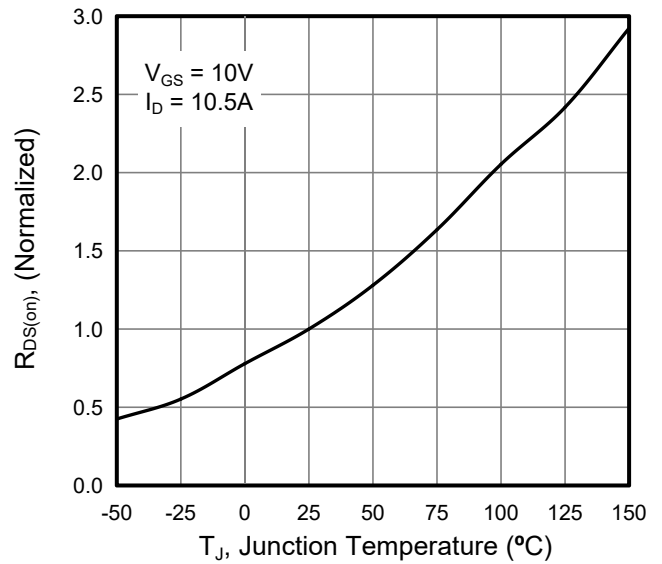
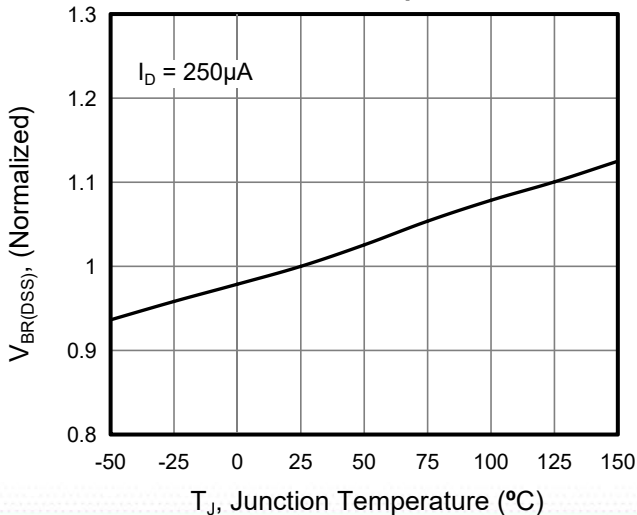
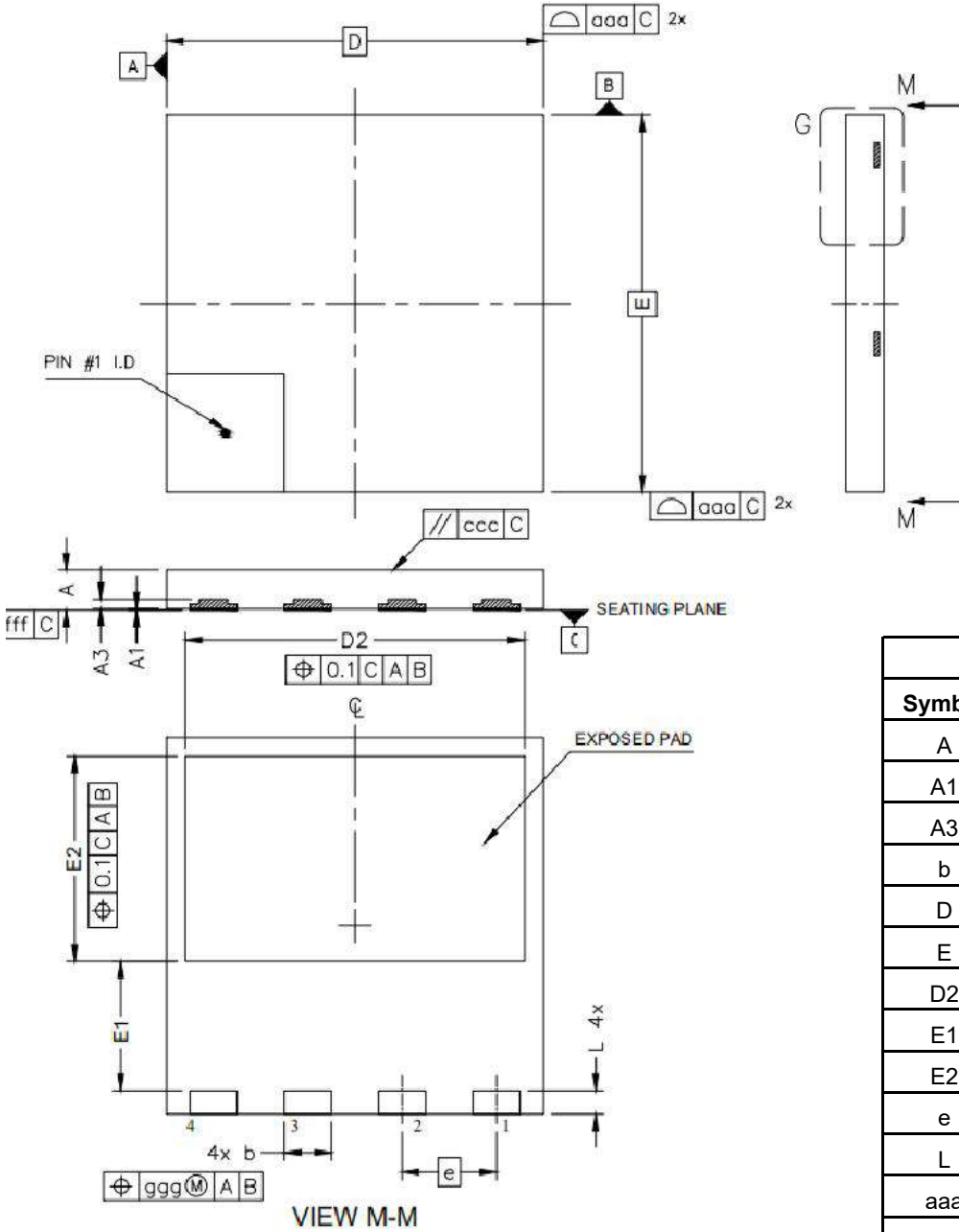


Figure 11. Breakdown Voltage vs. Junction Temperature



DFN 8*8



Unit:mm			
Symbol	Min.	Nom	Max.
A	0.75	---	0.95
A1	0.00	---	0.05
A3	0.10	---	0.30
b	0.90	---	1.10
D	7.90	---	8.10
E	7.90	---	8.10
D2	7.10	---	7.30
E1	2.65	---	2.85
E2	4.25	---	4.45
e	2.00 BSC		
L	0.40	---	0.60
aaa	0.10		
ggg	0.05		
ccc	0.05		
fff	0.05		

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