AS65N03S

N-Channel Super Trench Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	2.3mΩ@10V	65A
	3.6mΩ@4.5V	

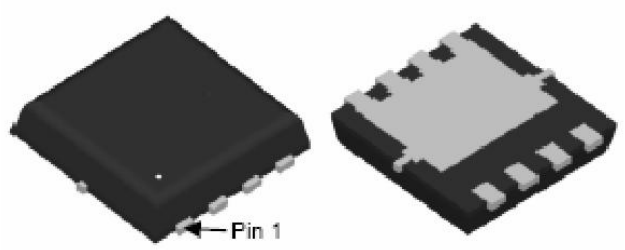
Feature

- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$

Application

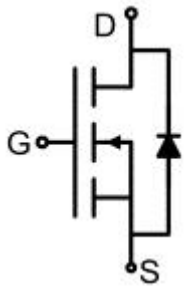
- DC/DC converter
- Ideal for high-frequency switching and synchronous rectification

Package

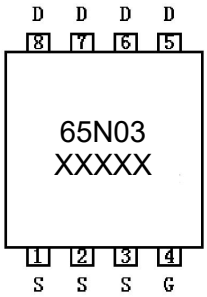


DFN3.3X3.3-8L

Circuit diagram



Marking



Absolute maximum ratings (Tc=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	65	A
Continuous Drain Current(T_C =100℃)	I_D (100 ℃)	45.5	A
Pulsed Drain Current	I_{DM}	260	A
Power Dissipation	P_D	55	W
Thermal Resistance,Junction-to-Case[1)]	$R_{\theta JC}$	2.3	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage[2)]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	2.0	V
Drain-source on-resistance[2)]	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		1.9	2.3	mΩ
		V_{GS} =4.5V, I_D =20A		3.0	3.6	
Dynamic characteristics[3)]						
Input Capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V,f =1MHz		2100		pF
Output Capacitance	C_{oss}			773		
Reverse Transfer Capacitance	C_{rss}			15.5		
Total Gate Charge	Q_g	V_{DS} =15V,V_{GS} =10V, I_D =20A		34.8		nC
Gate-Source Charge	Q_{gs}			6.2		
Gate-Drain Charge	Q_{gd}			5.1		
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V,V_{GS}=10V, I_D =20A,R_G=1.6Ω		7.5		nS
Turn-on rise time	t_r			4.0		
Turn-off delay time	$t_{d(off)}$			37		
Turn-off fall time	t_f			7.5		
Source-Drain Diode characteristics						
Diode Forward voltage[2)]	V_{SD}	V_{GS} =0V, I_S=20A			1.2	V
Diode Forward Current[1)]	Is				65	A
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F = Is di/dt = 100A/μs [2)]		14		nS
Reverse Recovery Charge	Q_{rr}			21		nC

Notes:

1) Surface Mounted on FR4 Board, t ≤ 10 sec.

2) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

3) Guaranteed by design, not subject to production.

Typical Characteristics

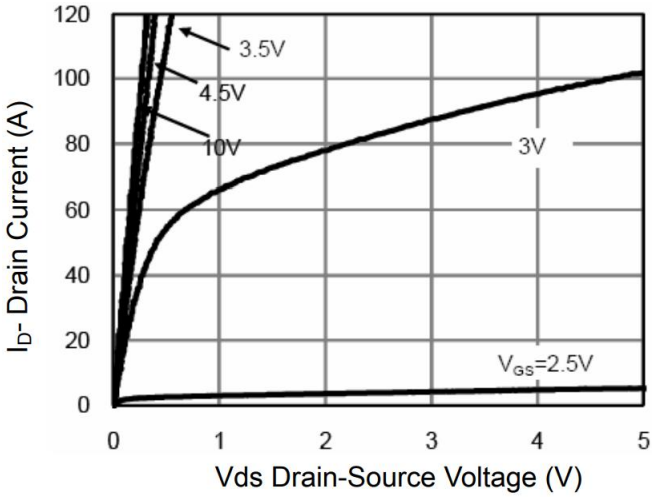


Figure 1 Output Characteristics

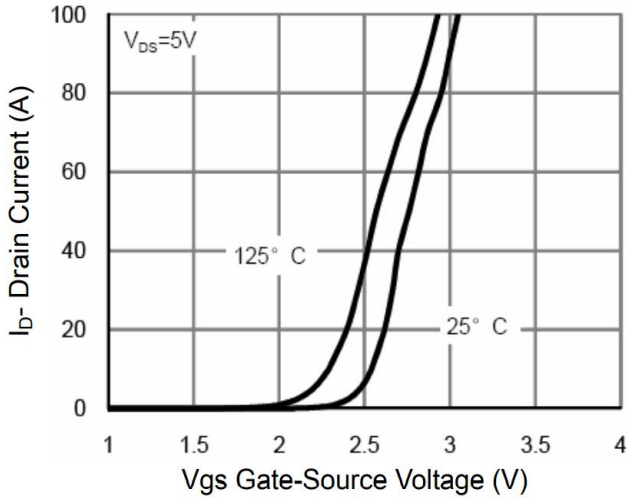


Figure 2 Transfer Characteristics

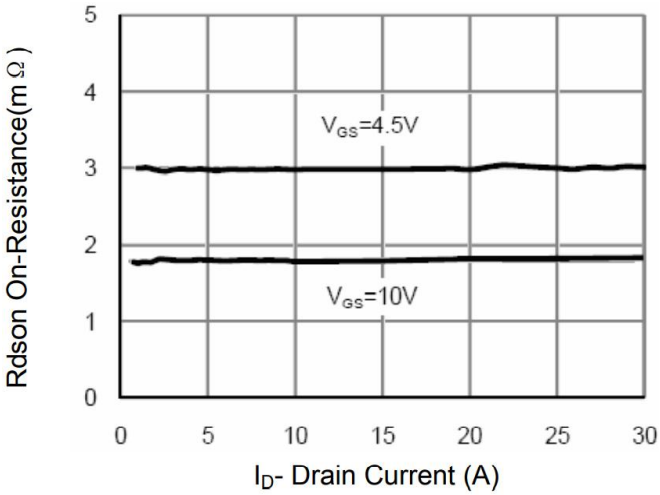


Figure 3 Rdson- Drain Current

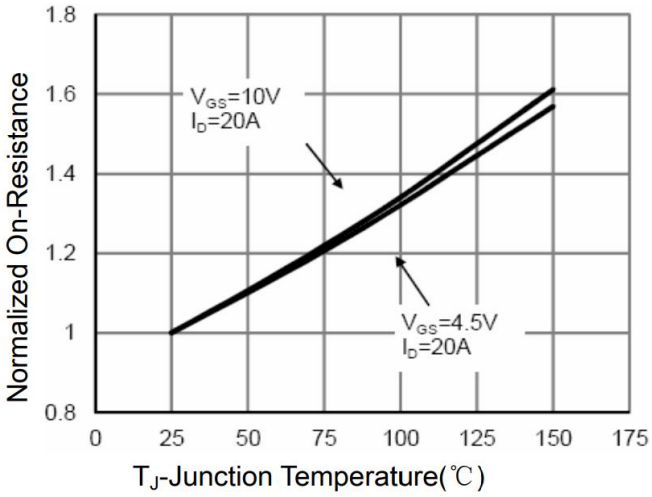


Figure 4 Rdson-Junction Temperature

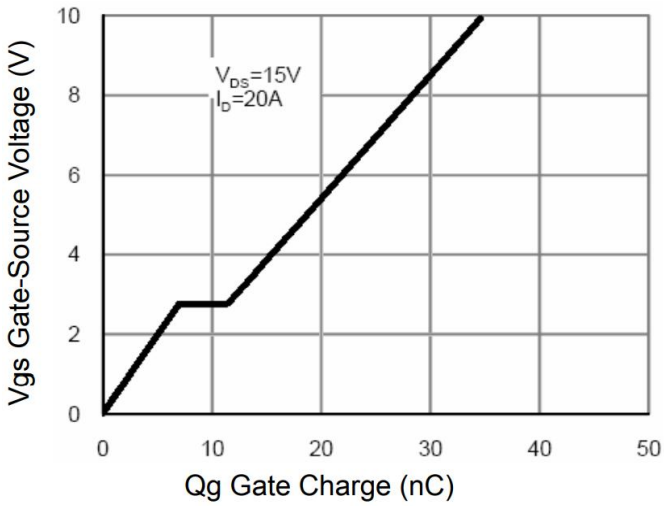


Figure 5 Gate Charge

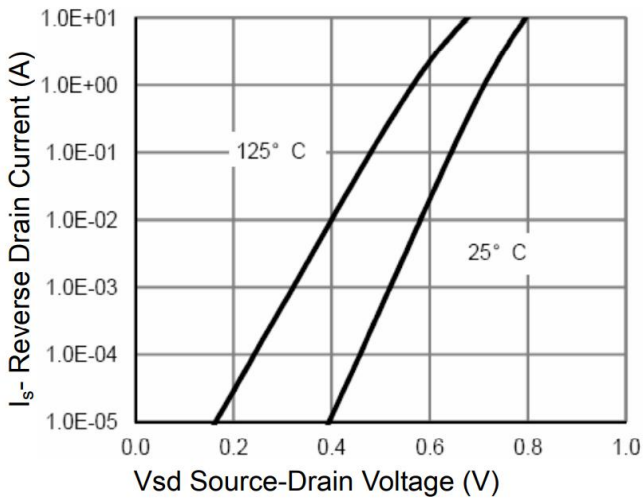


Figure 6 Source- Drain Diode Forward

Typical Characteristics

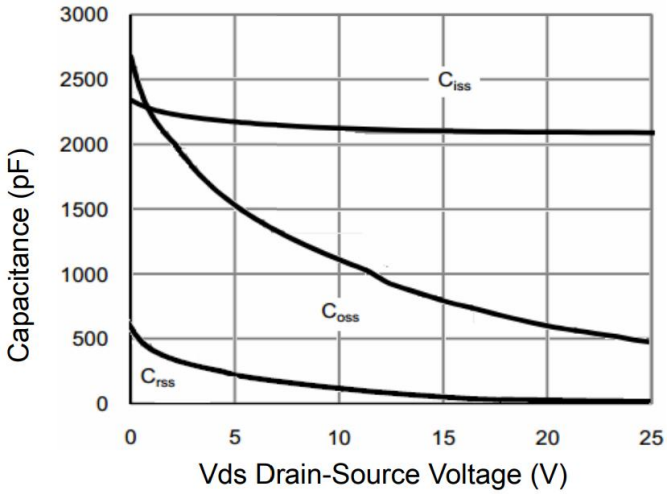


Figure 7 Capacitance vs Vds

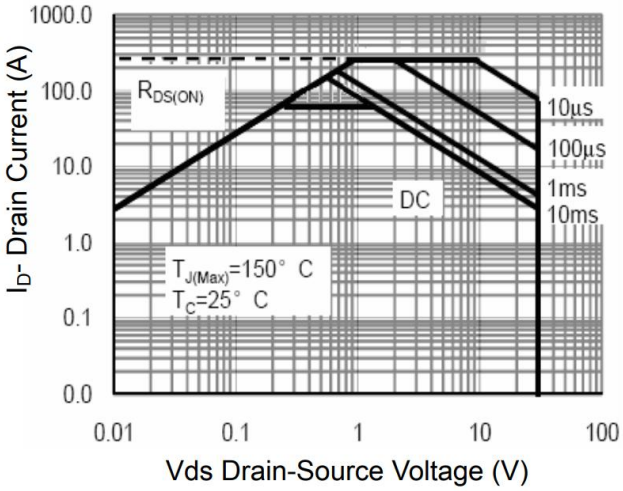


Figure 8 Safe Operation Area

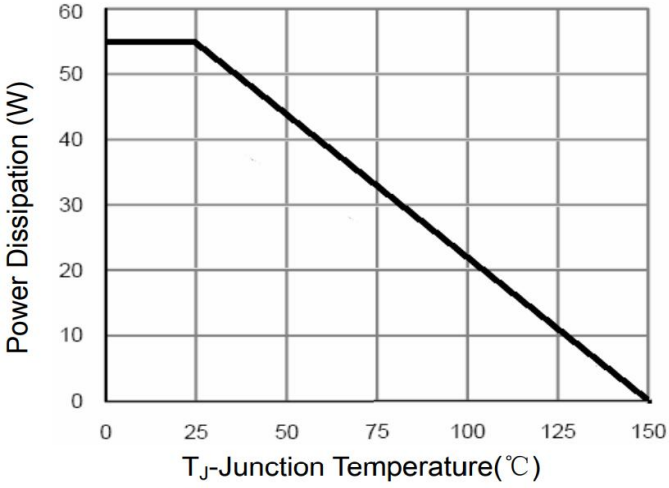


Figure 9 Power De-rating

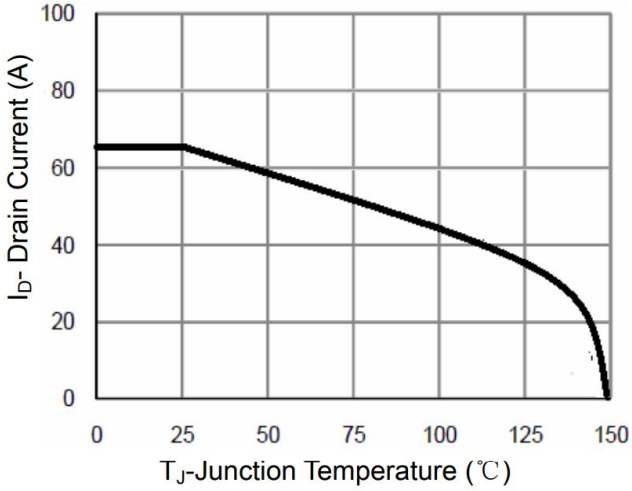


Figure 10 Current De-rating

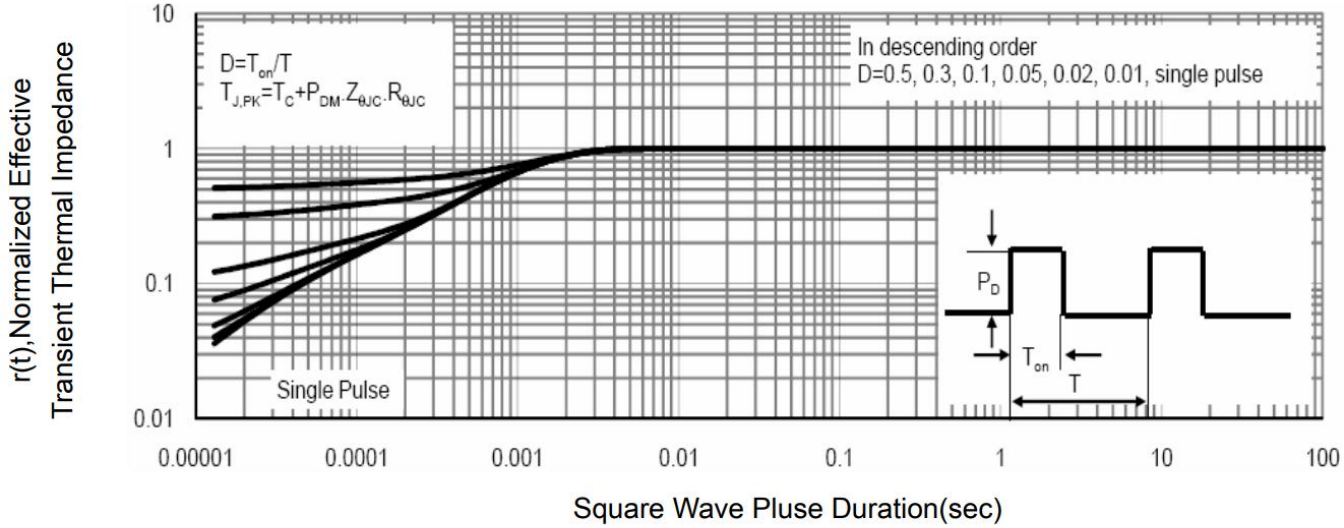
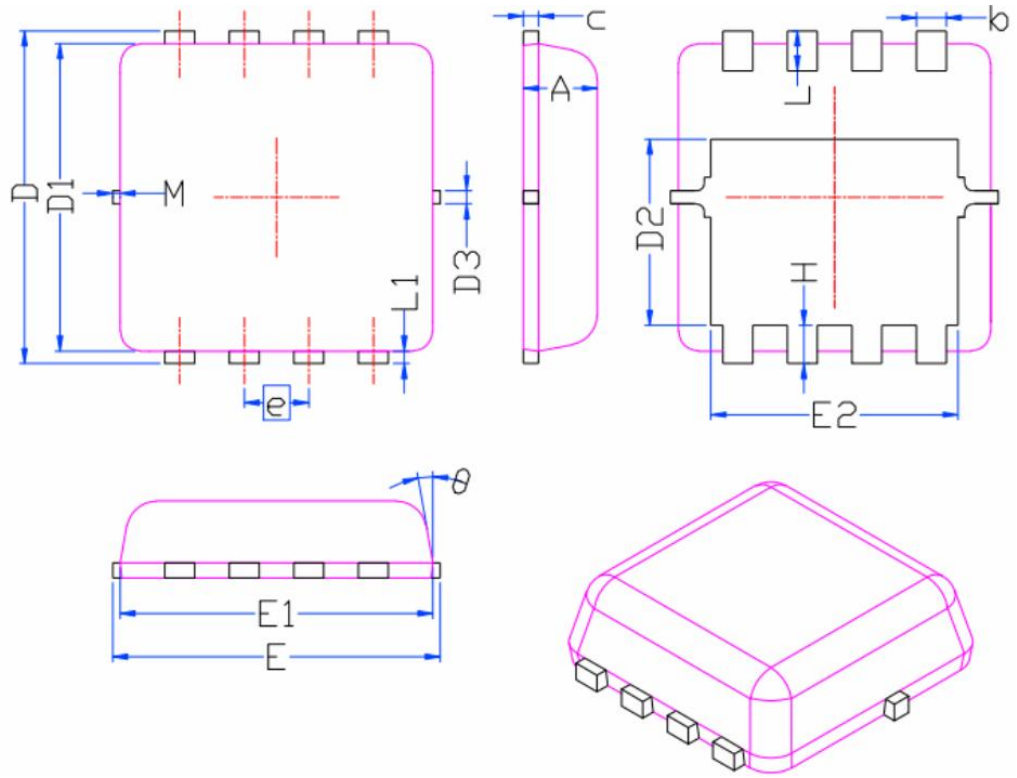


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.014
c	0.100	0.250	0.004	0.010
D	3.250	3.450	0.128	0.136
D1	3.000	3.200	0.118	0.126
D2	1.780	1.980	0.070	0.078
D3	0.130 BSC		0.005 BSC	
E	3.100	3.300	0.122	0.130
E1	3.000	3.200	0.118	0.126
E2	2.390	2.590	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.012	0.020
L	0.300	0.500	0.012	0.020
L1	0.130 BSC		0.005BSC	
M	-	0.150	0.000	0.006
θ	0°	12°	0°	12°