

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	8mΩ@10V	35A
	13mΩ@4.5V	

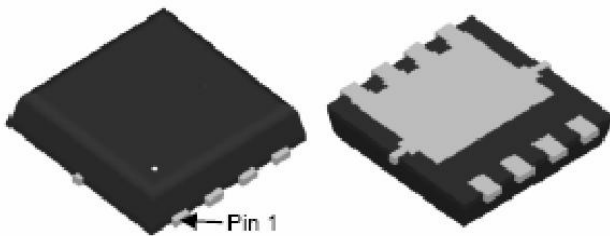
Feature

- High density cell design for low $R_{DS(on)}$
- Excellent package for heat dissipation
- Suffix "-Q1" for AEC-Q101

Application

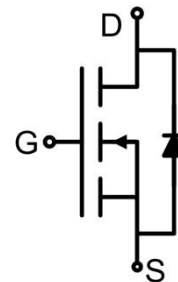
- High current load applications
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package



DFN3.3X3.3-8L

Circuit diagram



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	35	A
Continuous Drain Current (100°C)	I_D (100°C)	22	A
Pulsed Drain Current ¹⁾	I_{DM}	160	A
Power Dissipation	P_D	40	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.1	°C/W
Single pulse avalanche energy	E_{AS}	120	mJ
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			±100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		2.5	V
Drain-source on-resistance ¹⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		6.5	8	mΩ
		$V_{GS} = 4.5V, I_D = 10A$		8.7	13	
Dynamic characteristics²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 20V, V_{GS} = 0V, f = 1MHz$		1860		pF
Output Capacitance	C_{oss}			256		
Reverse Transfer Capacitance	C_{rss}			205		
Total Gate Charge	Q_g	$V_{DS} = 20V, V_{GS} = 10V, I_D = 20A$		46.7		nC
Gate-Source Charge	Q_{gs}			8		
Gate-Drain Charge	Q_{gd}			11.6		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 20V, V_{GS} = 10V, I_D = 2A, R_{GEN} = 3\Omega, R_L = 1\Omega$		10		nS
Turn-on rise time	t_r			21		
Turn-off delay time	$t_{d(off)}$			36		
Turn-off fall time	t_f			25		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I_S				35	A
Diode Forward voltage	V_{DS}	$V_{GS} = 0V, I_S = 20A$			1.2	V
Reverse Recovery Time	t_{rr}	$T_J = 25^\circ C, I_F = 20A$		15		nS
Reverse Recovery Charge	Q_{rr}	$di/dt = 100A/\mu s$ ¹⁾		2.3		nC

Notes:

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

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

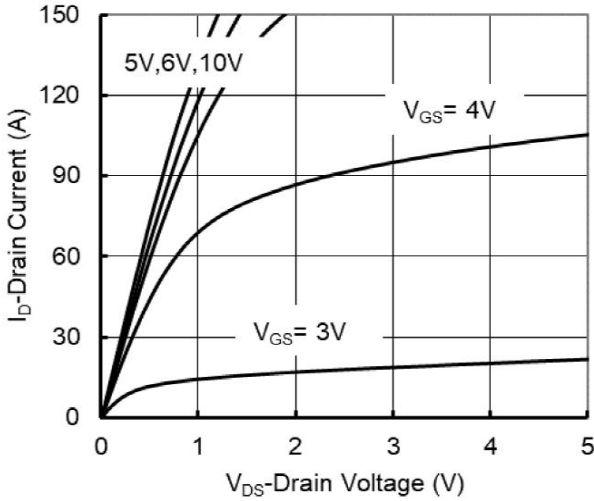


Figure 1. Output Characteristics

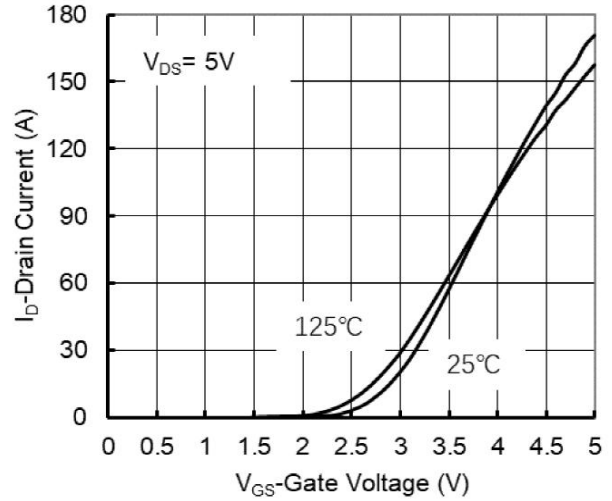


Figure 2. Transfer Characteristics

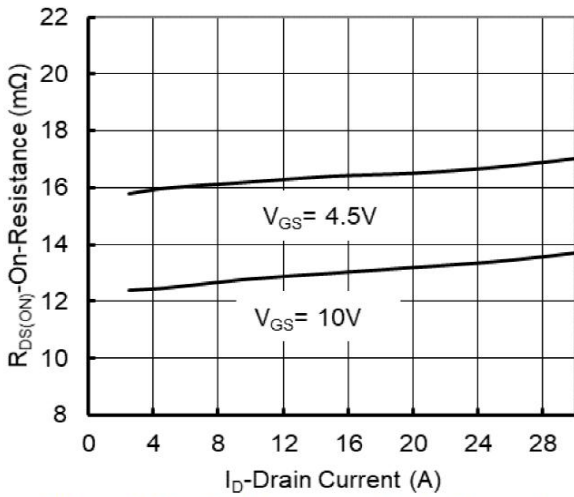


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

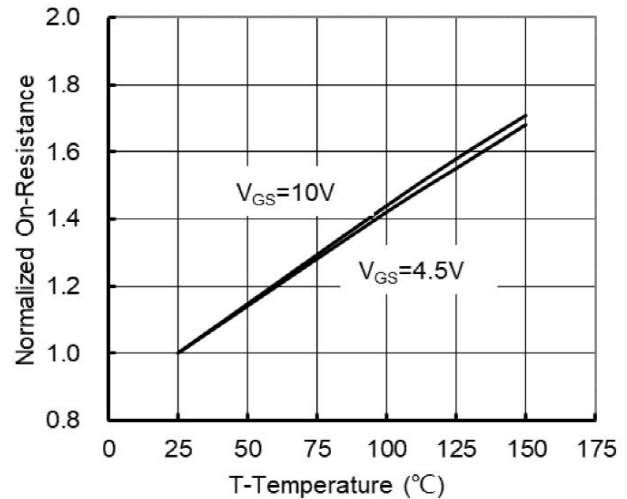


Figure 4. On-Resistance vs. Junction Temperature

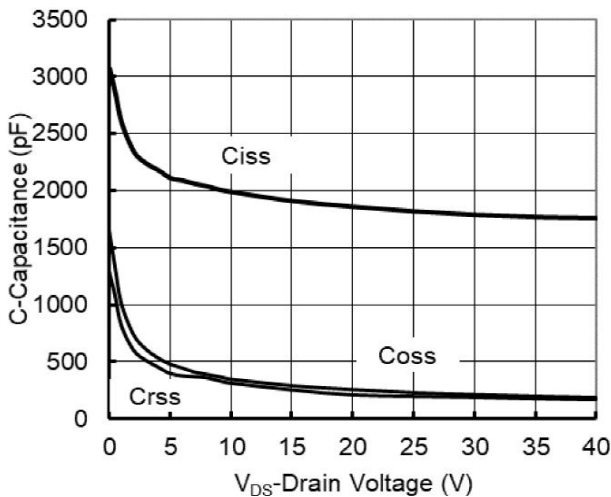


Figure 5. Capacitance Characteristics

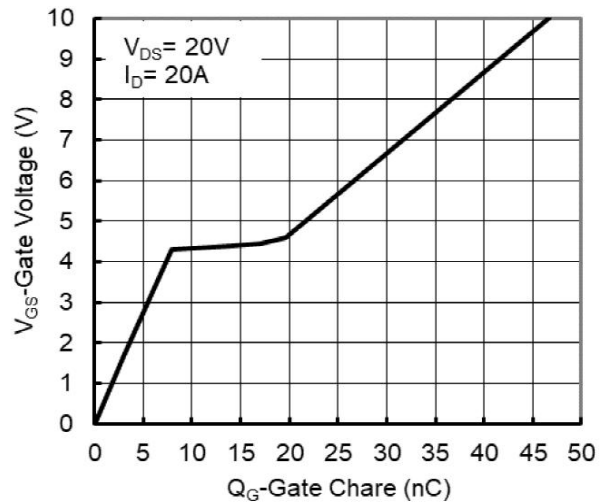


Figure 6. Gate Charge

Typical Characteristics

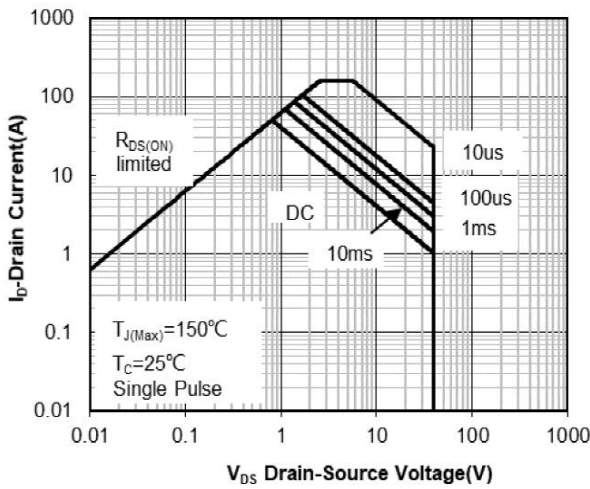


Figure 7. Safe Operation Area

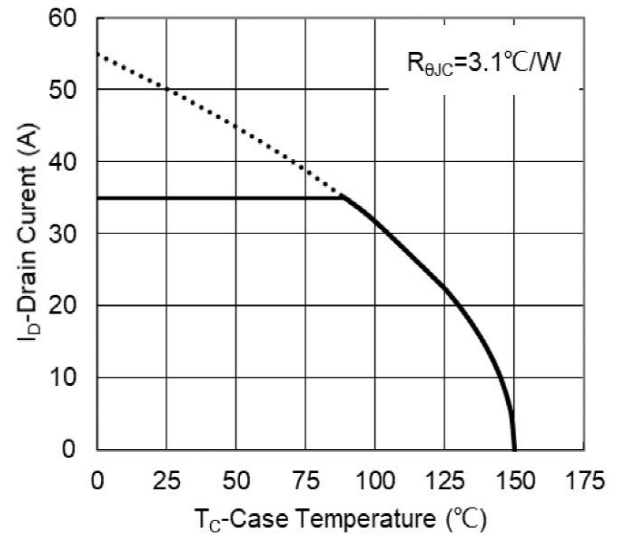


Figure 8. Maximum Continuous Drain Current vs Ambient Temperature

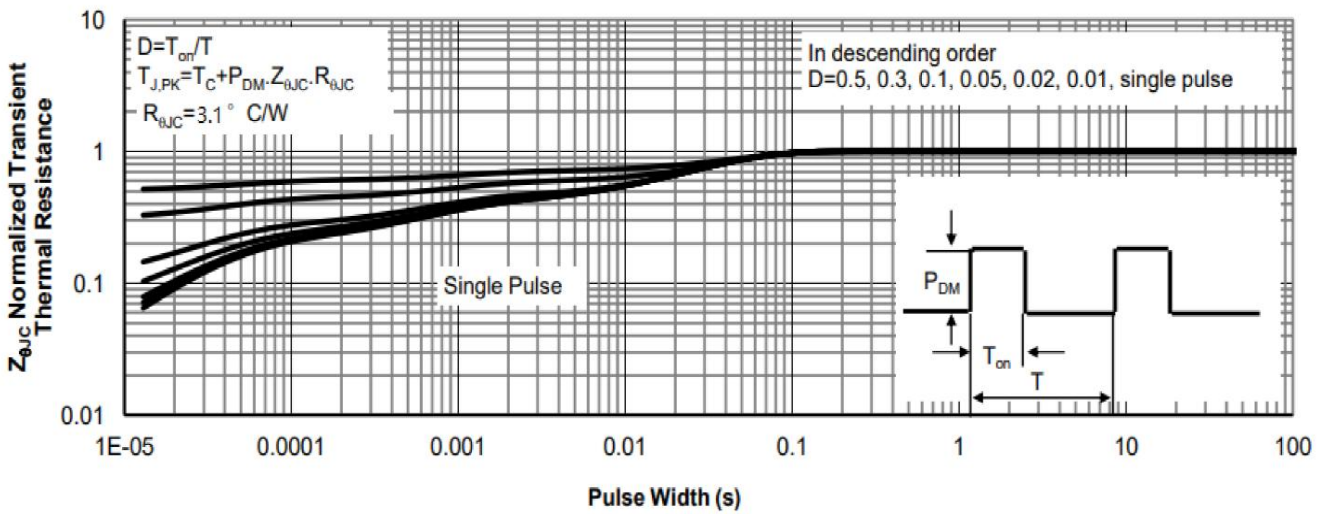
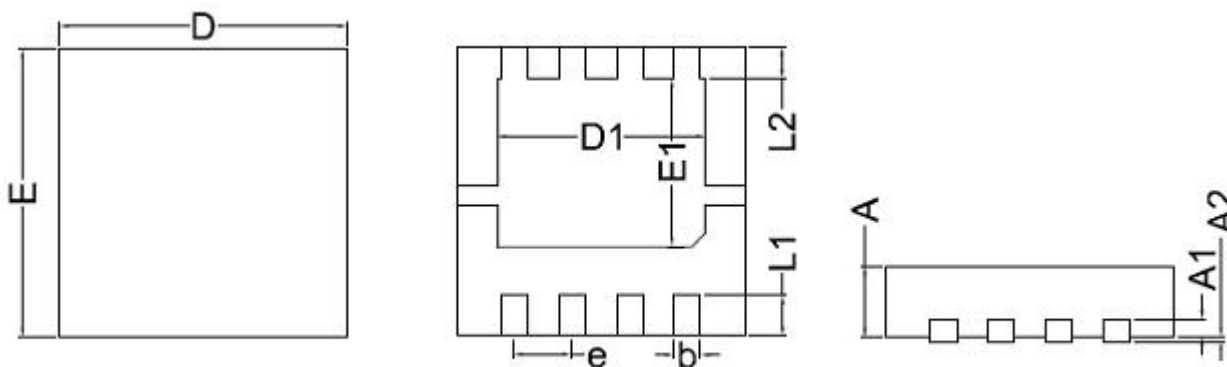


Figure 9. Normalized Maximum Transient Thermal Impedance

DFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.027	0.035
b	0.200	0.400	0.007	0.016
D	3.150	3.350	0.124	0.132
D1	2.200	2.500	0.086	0.098
E	3.150	3.350	0.124	0.132
E1	1.800	2.000	0.070	0.079
e	0.650 BSC		0.026 BSC	
A1	0.200 BSC		0.007 BSC	
A2	0.000	0.100	0.000	0.004
L1	0.350	0.550	0.013	0.022
L2	0.350 BCS.		0.013BSC	