

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	13mΩ@-20V	-40A
	15mΩ@-10V	
	25mΩ@-4.5V	

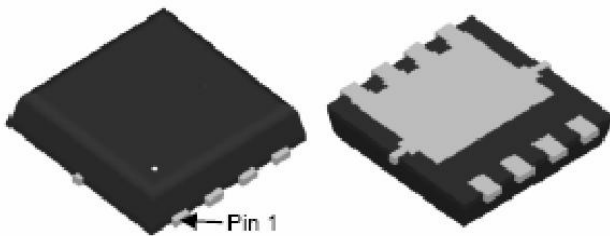
Feature

- High density cell design for ultra low Rdson
- High Speed switching
- Suffix “-Q1” for AEC-Q101

Application

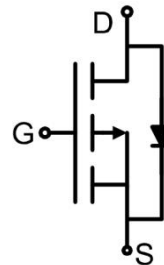
- Battery protection
- Load switching
- Power management

Package

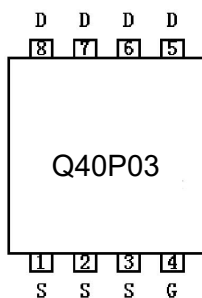


DFN3.3X3.3-8L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±25	V
Continuous Drain Current	I _D	-40	A
Continuous Drain Current(T _C =70 °C)	I _D (70 °C)	-33	A
Pulsed Drain Current	I _{DM}	-160	A
Power Dissipation	P _D	32	W
Thermal Resistance,Junction-to-Case	R _{θJC}	4.0	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_A=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 = -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} = ±25V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.2	-1.8	-2.8	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} = -20V, I _D = -20A		9	13	mΩ
		V _{GS} = -10V, I _D = -15A		10	15	
		V _{GS} = -4.5V, I _D = -10A		16	25	
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz		2152		pF
Output Capacitance	C _{oss}			308		
Reverse Transfer Capacitance	C _{rss}			242		
Total Gate Charge	Q _g	V _{DS} = -15V, V _{GS} = -10V, I _D = -12A		40		nC
Gate-Source Charge	Q _{gs}			8.4		
Gate-Drain Charge	Q _{gd}			8.6		
Turn-on delay time	t _{d(on)}	V _{DD} = -15V, V _{GS} = -10V, I _D = -1A, R _{GEN} = 2.5Ω		8		nS
Turn-on rise time	t _r			19		
Turn-off delay time	t _{d(off)}			75		
Turn-off fall time	t _f			46		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = -20A			-1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = -12A, di/dt = 100A/μs ¹⁾		18		nS
Reverse Recovery Charge	Q _{rr}			7.8		nC

Notes:

- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.

Typical Characteristics

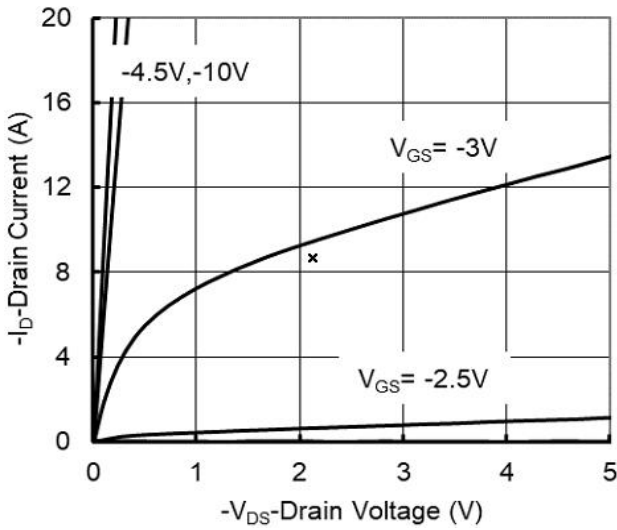


Figure 1. Output Characteristics

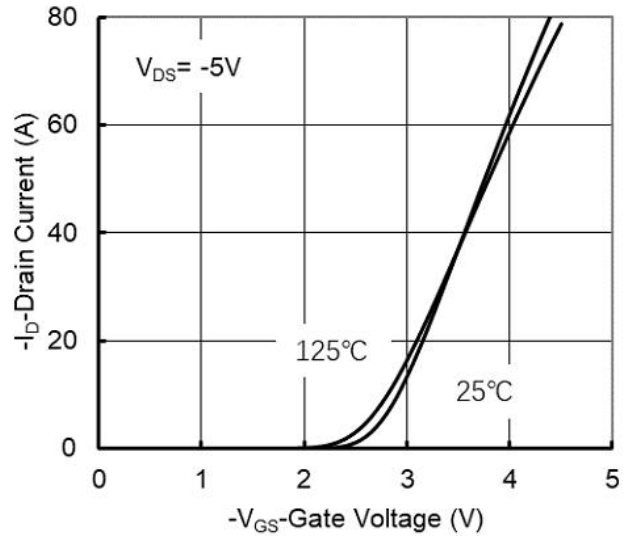


Figure 2. Transfer Characteristics

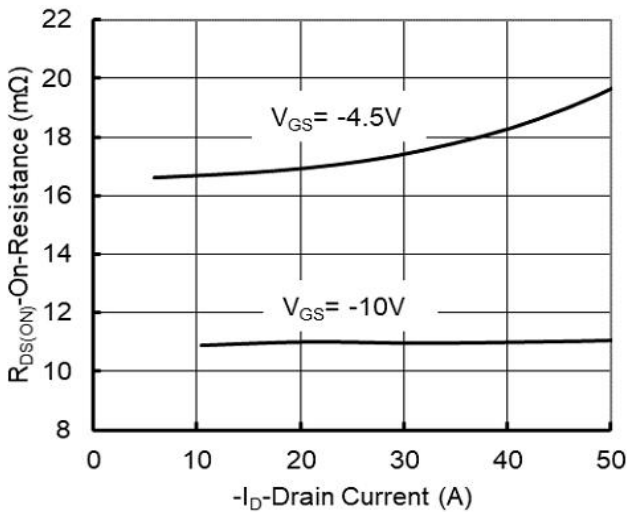


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

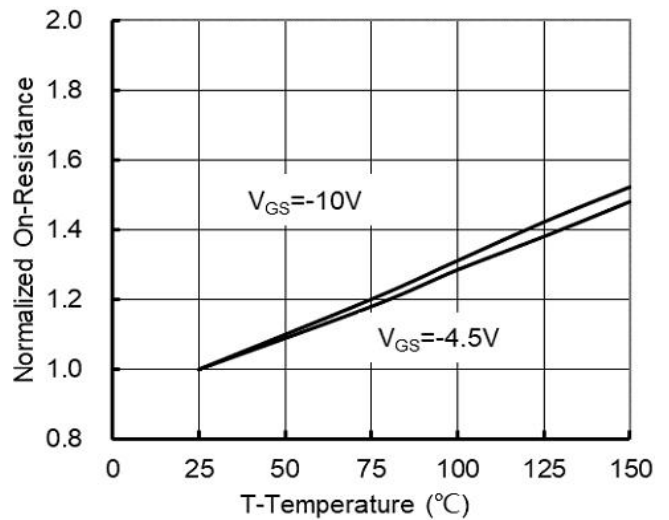


Figure 4. On-Resistance vs. Junction Temperature

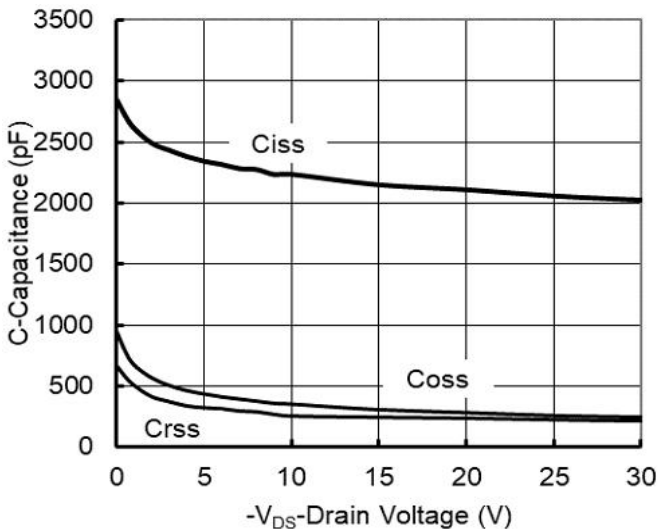


Figure 5. Capacitance Characteristics

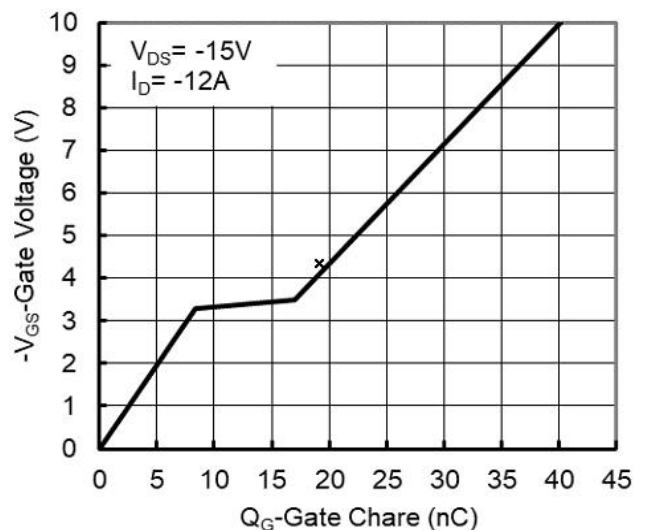


Figure 6. Gate Charge

Typical Characteristics

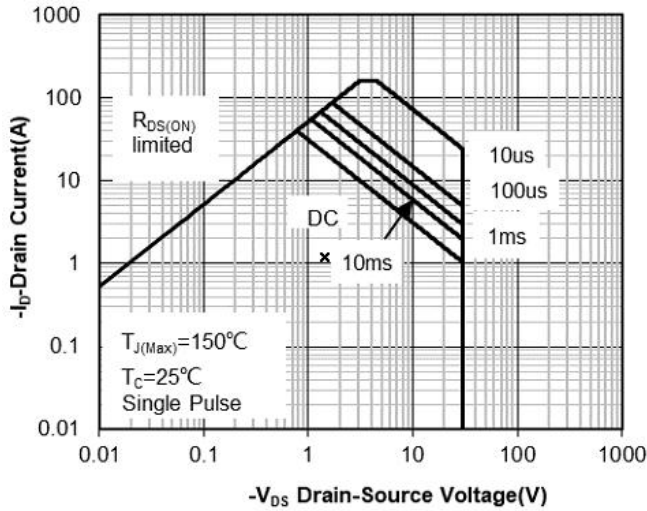


Figure 7. Safe Operation Area

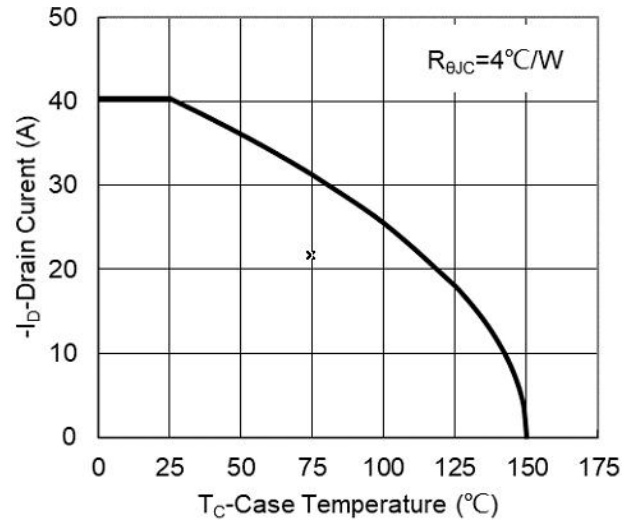


Figure 8. Maximum Continuous Drain Current vs Case Temperature

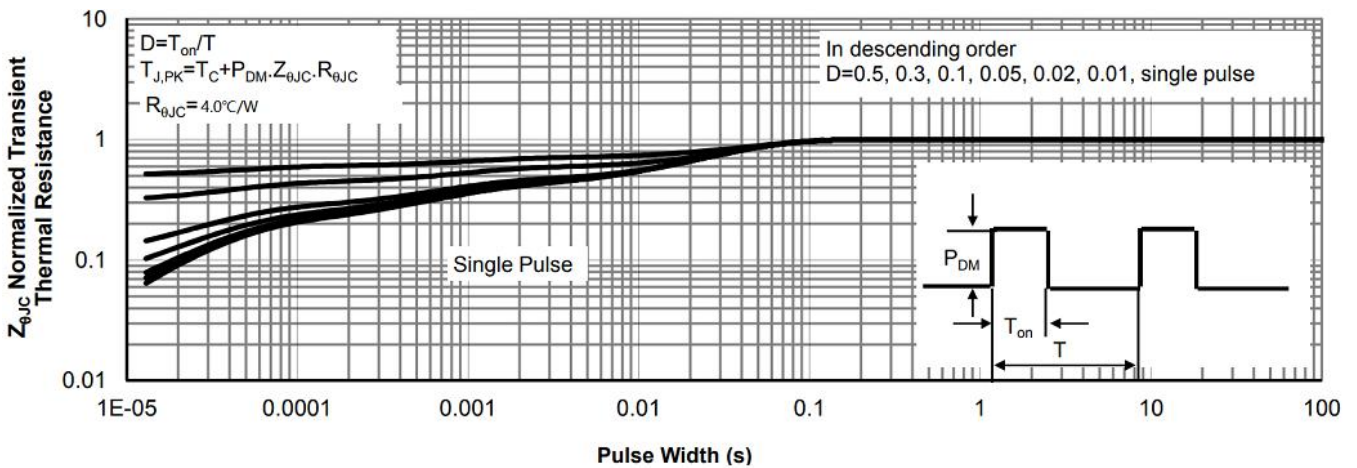
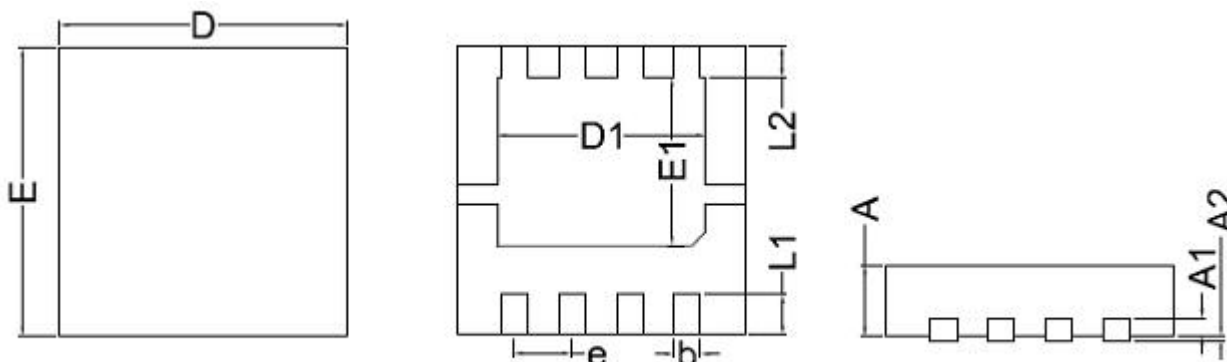


Figure 9. Normalized Maximum Transient Thermal Impedance

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	-	0.100	-	0.004
L1	0.350	0.550	0.013	0.022
L2	0.350 BCS.		0.013BSC	