

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-60V	47mΩ@-10V	-22.5A
	60mΩ@-4.5V	

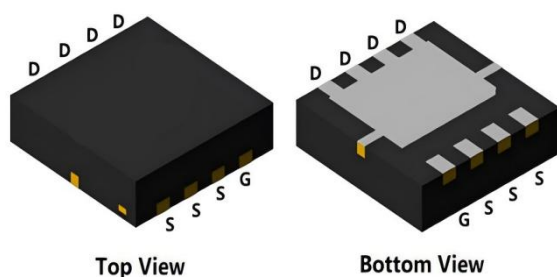
Feature

- Split gate trench MOSFET technology
- Low $R_{DS(on)}$ & FOM
- Low C_{rss}
- Extremely low switching loss
- Excellent stability and uniformity
- Suffix "-Q1" for AEC-Q101

Application

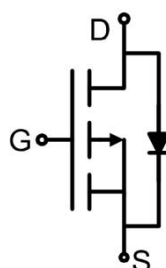
- Power management
- Industrial DC/DC Conversion Circuits

Package

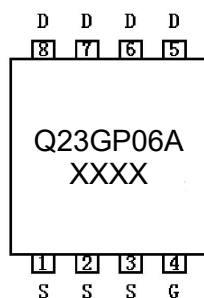


DFN3.3*3.3-8L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	-22.5	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	-14.3	A
Pulsed Drain Current ¹⁾	I _{DM}	-90	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	81	mJ
Power Dissipation ³⁾ (T _C =25°C)	P _D	43	W
Thermal Resistance Junction to Case	R _{θJC}	2.9	°C/W
Operating Junction Temperature	T _J	-55 ~ +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 =-250μA	-60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.3	-1.8	-2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-20A		35	47	mΩ
		V _{GS} =-4.5V, I _D =-10A		45	60	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, f =1MHz		1100		pF
Output Capacitance	C _{oss}			350		
Reverse Transfer Capacitance	C _{rss}			28		
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-10V I _D =-20A		18.7		nC
Gate-Source Charge	Q _{gs}			4.7		
Gate-Drain Charge	Q _{gd}			3		
Turn-on delay time	t _{d(on)}	V _{DS} =-30V, V _{GS} =-10V R _L =2.5Ω, R _G =6Ω		7.5		nS
Turn-on rise time	t _r			39.5		
Turn-off delay time	t _{d(off)}			43.6		
Turn-off fall time	t _f			55.1		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{DS}	V _{GS} =0V, I _S =-20A			-1.3	V
Diode Forward Current	I _S				-23	A
Reverse Recovery Time	T _{rr}	I _F =-20A, di/dt =-100A/μs		20.2		nS
Reverse Recovery Charge	Q _{rr}			8.2		nC

Notes:

- 1) Repetitive rating; pulse width limited by max. junction temperature.
- 2) V_{DD}=50V, R_G=25Ω, L=0.5mH, I_{AS}=18A.
- 3) P_d is based on max. junction temperature, using junction-case thermal resistance.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

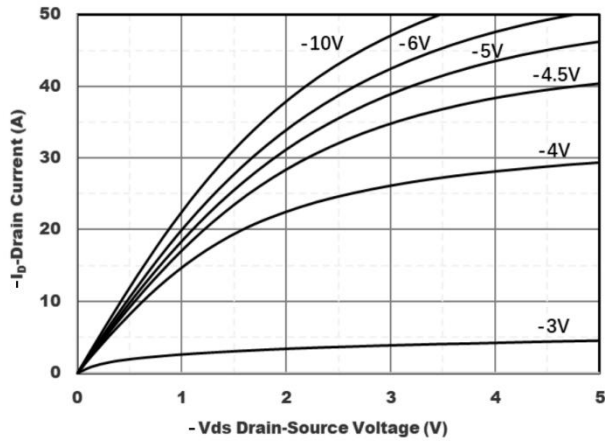


Figure1. Output Characteristics

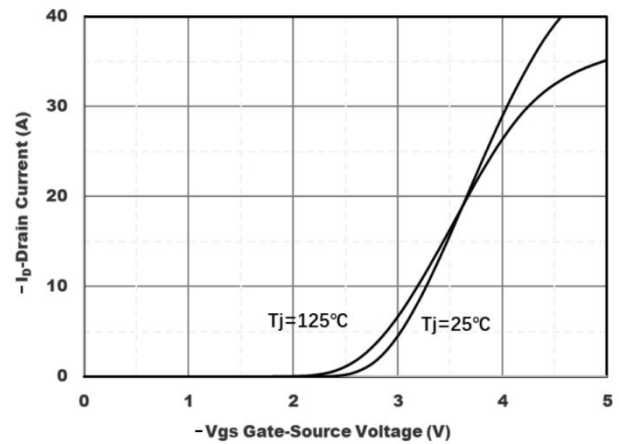


Figure2. Transfer Characteristics

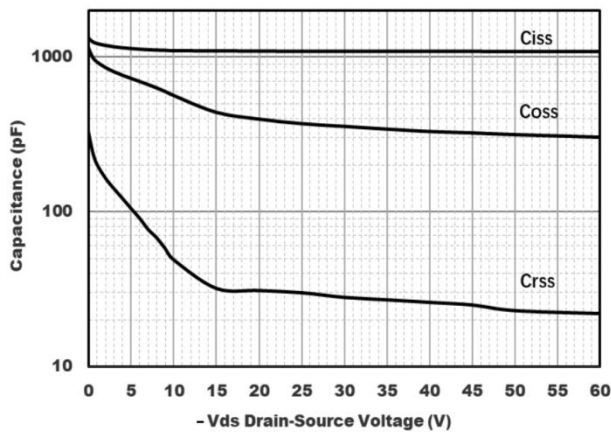


Figure3. Capacitance Characteristics

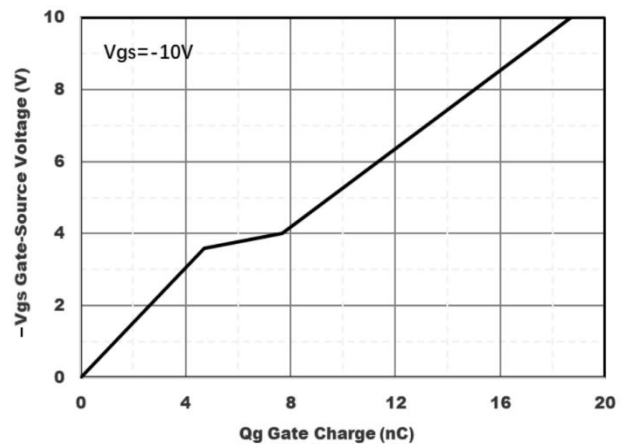


Figure4. Gate Charge

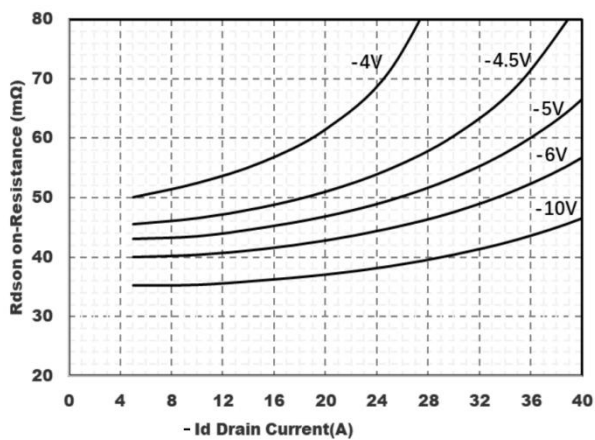


Figure5. : On-Resistance vs. Gate to Source Voltage

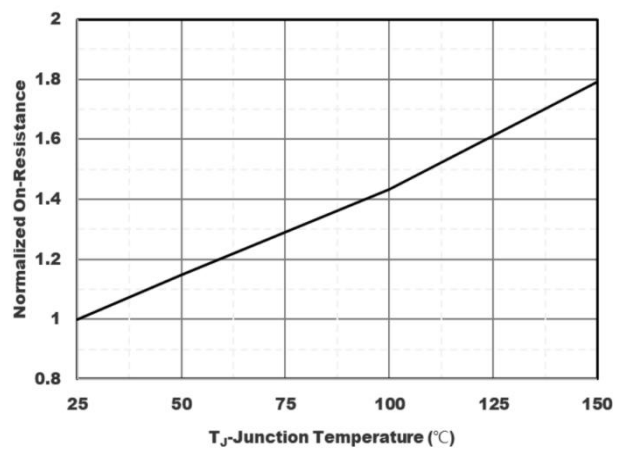


Figure6. Normalized On-Resistance

Typical Characteristics

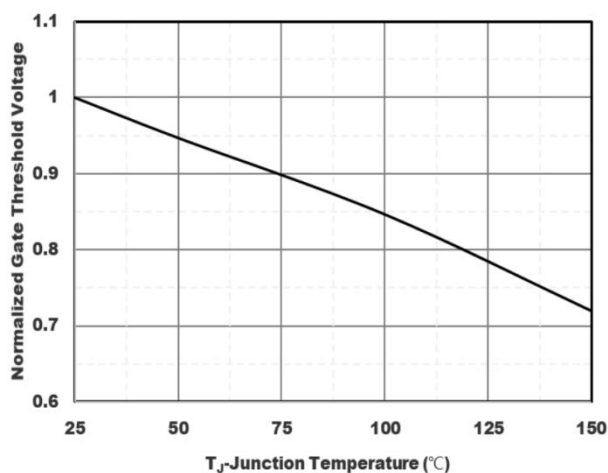


Figure 7. Normalized Gate Threshold Voltage

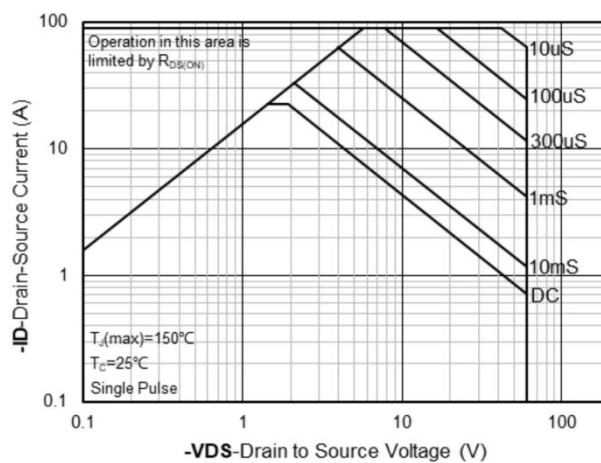


Figure 8. Safe Operation Area

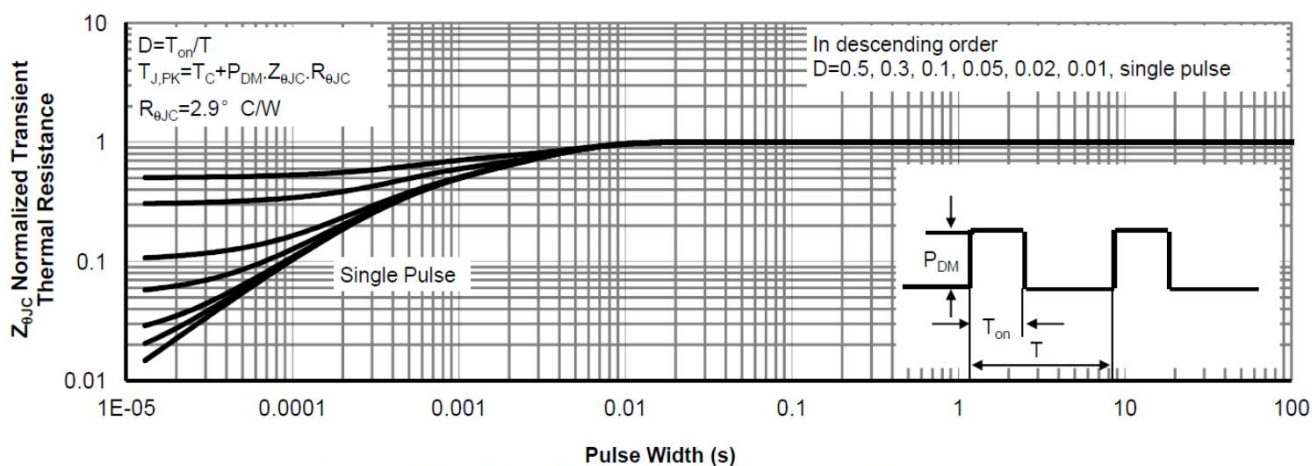
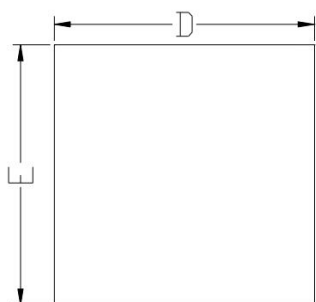
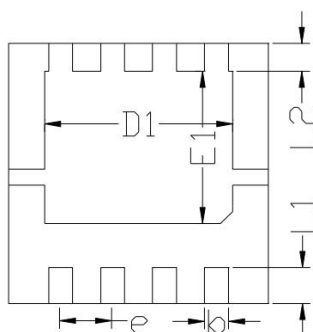


Figure 9. Normalized Maximum Transient thermal impedance

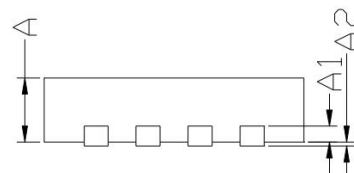
DFN3.3*3.3-8L Package Information



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
D	3.150	3.350	0.124	0.132
E	3.150	3.350	0.124	0.132
A	0.700	0.900	0.027	0.035
A1	0.200 BSC.		0.008 BSC.	
A2	0.000	0.100	0.000	0.004
D1	2.200	2.500	0.086	0.098
E1	1.800	2.000	0.071	0.079
L1	0.350	0.550	0.013	0.022
L2	0.350 BSC.		0.014 BSC.	
b	0.200	0.400	0.008	0.016
e	0.650 BSC.		0.026 BSC.	