

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	7.5mΩ@10V	70A
	9.5mΩ@4.5V	

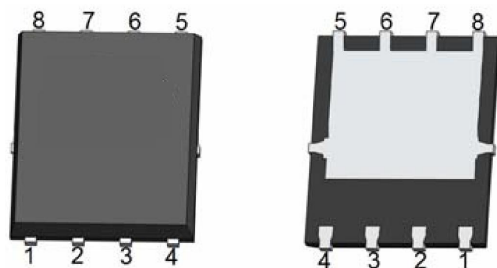
Feature

- High density cell design for low Rdson
- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- Suffix “-Q1” for AEC-Q101

Application

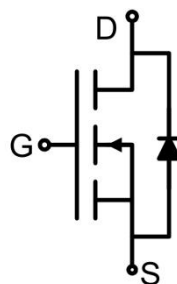
- DC-DC converter
- Power management functions
- Industrial and Motor Drive application

Package

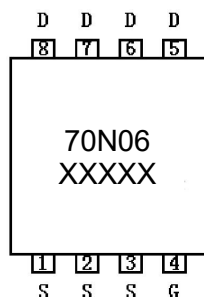


DFN5X6-8L

Circuit diagram



Marking



Absolute maximum ratings (Ta=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 (Silicon limited)	I_D	70	A
Drain Current-Continuous($T_c = 100^\circ\text{C}$)	$I_D (100^\circ\text{C})$	44	A
Pulsed Drain Current	I_{DM}	210	A
Power Dissipation	P_D	70	W
Thermal Resistance ,Junction-to-Ambient	$R_{\theta JA}$	55	$^\circ\text{C/W}$
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.8	$^\circ\text{C/W}$
Single pulse avalanche energy	E_{AS}	162	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.2	1.7	2.5	V
Drain-source on-resistance ¹⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		5.3	7.5	m Ω
		$V_{GS} = 4.5V, I_D = 10A$		6.9	9.5	
Dynamic characteristics ²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 35V, V_{GS} = 0V, f = 1MHz$		2000		pF
Output Capacitance	C_{oss}			390		
Reverse Transfer Capacitance	C_{rss}			13		
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 20A$		34		nC
Gate-Source Charge	Q_{gs}			7.8		
Gate-Drain Charge	Q_{gd}			5.2		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 12A, R_{GEN} = 3\Omega$		10		nS
Turn-on rise time	t_r			36		
Turn-off delay time	$t_{d(off)}$			30		
Turn-off fall time	t_f			57		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I_S				70	A
Diode Forward voltage	V_{DS}	$V_{GS} = 0V, I_S = 20A$			1.3	V
Reverse Recovery Time	t_{rr}	$T_J = 25^{\circ}C, I_F = 20A$ $di/dt = 100A/\mu s$ ¹⁾		27		nS
Reverse Recovery Charge	Q_{rr}			36		nC

Notes:

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

Typical Characteristics

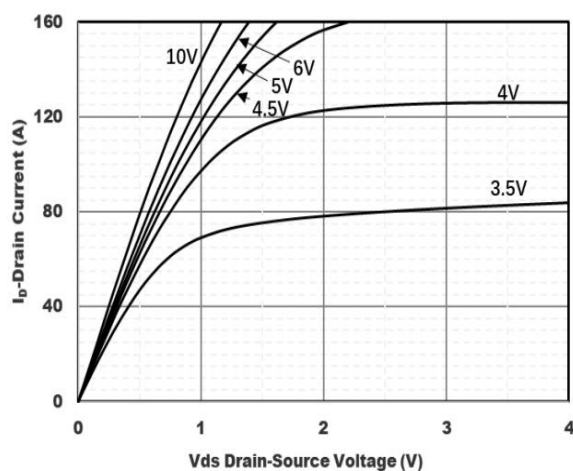


Figure1. Output Characteristics

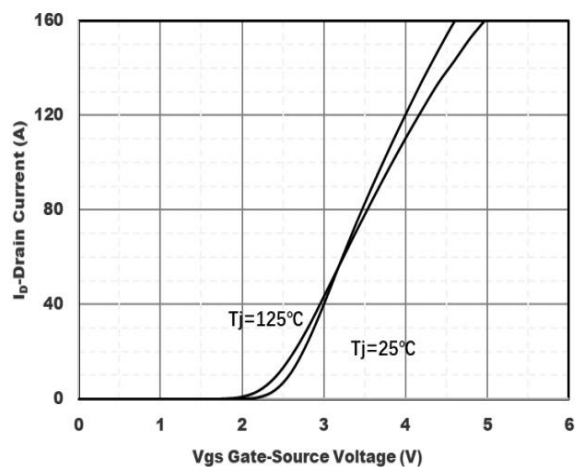


Figure2. Transfer Characteristics

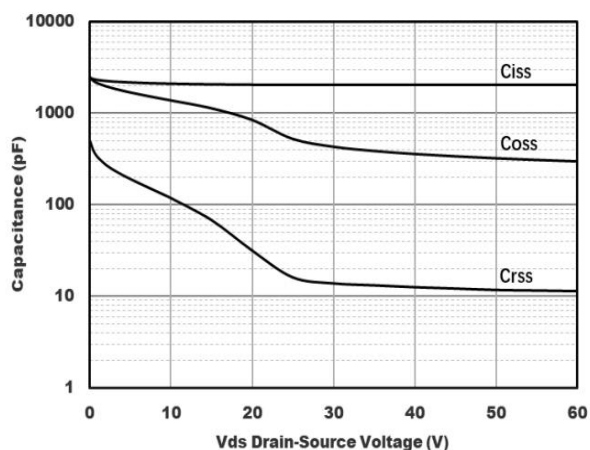


Figure3. Capacitance Characteristics

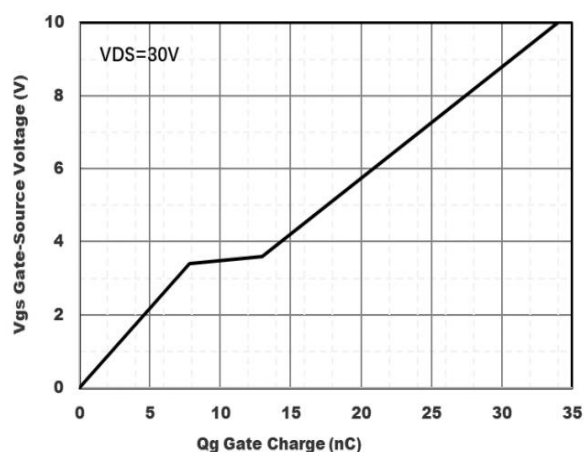


Figure4. Gate Charge

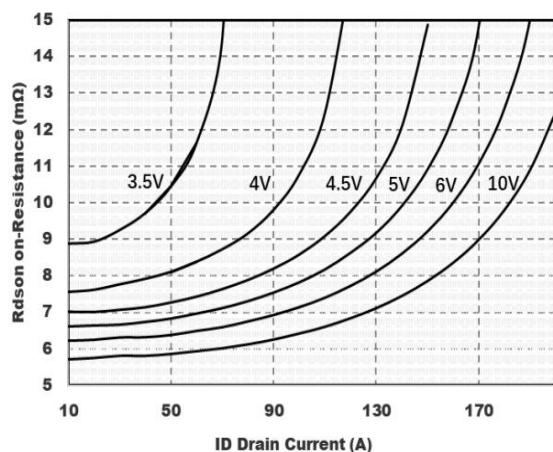


Figure5. Drain-Source on Resistance

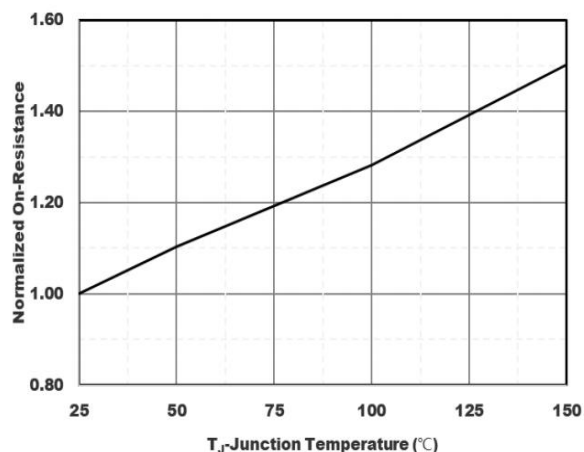


Figure6. Normalized On-Resistance

Typical Characteristics

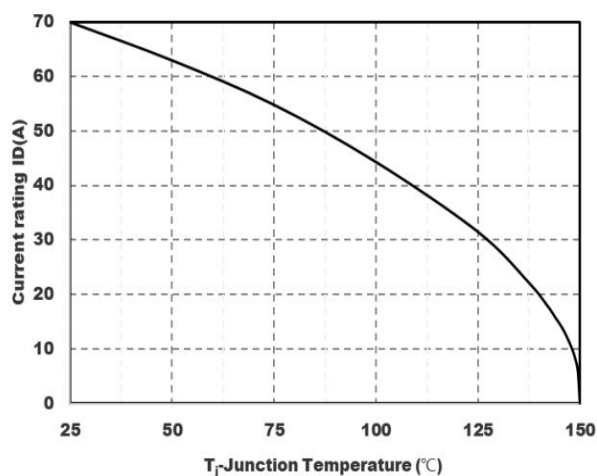


Figure7. Drain current

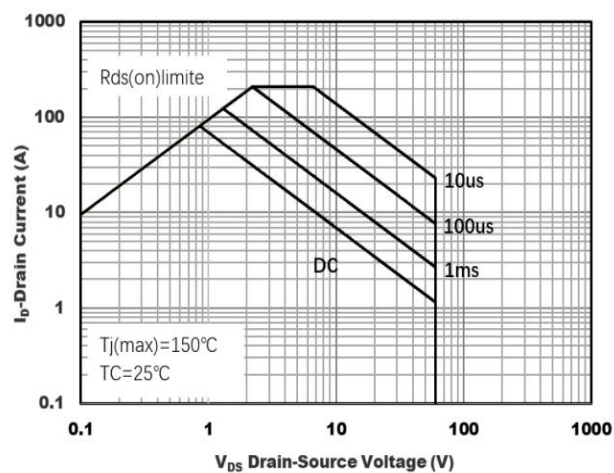


Figure8. Safe Operation Area

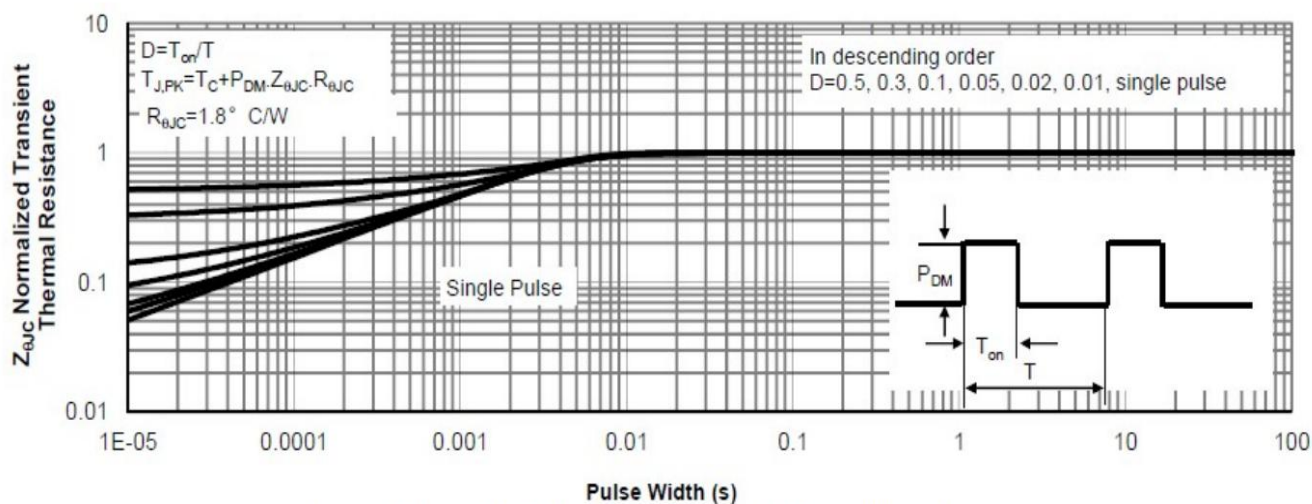
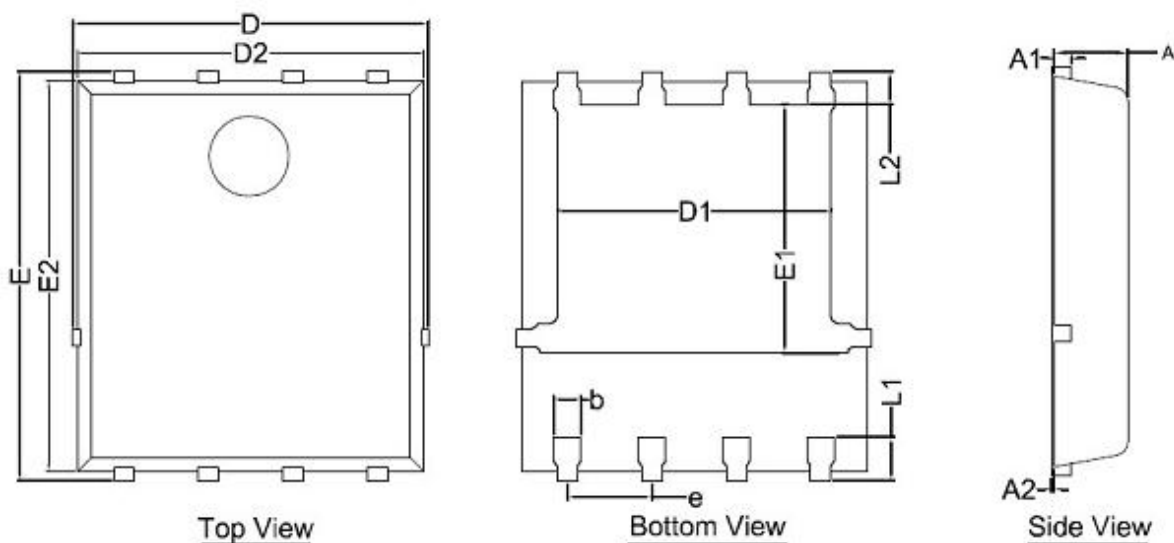


Figure8. Normalized Maximum Transient Thermal Impedance

DFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.000	1.200	0.039	0.047
A1	0.254BSC.		0.010BSC.	
A2	0.000	0.100		0.004
D	5.150	5.550	0.202	0.219
E	5.950	6.350	0.234	0.250
D1	3.920	4.320	0.154	0.170
E1	3.520	3.920	0.139	0.154
D2	5.000	5.400	0.197	0.212
E2	5.660	6.060	0.223	0.239
b	0.310	0.510	0.012	0.020
e	1.270BSC.		0.050BSC	
L1	0.560	0.760	0.022	0.030
L2	0.500BSC.		0.020BSC	