

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	3.1mΩ@10V	150A

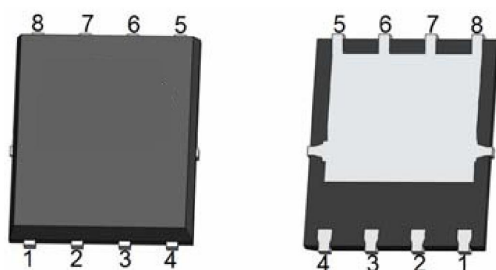
Feature

- Excellent gate charge x $R_{DS(on)}$ product
- Very low on-resistance $R_{DS(on)}$
- Suffix“-Q1”for AEC-Q101

Application

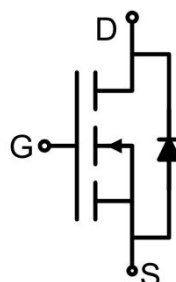
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

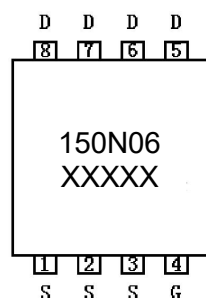


DFN5X6-8L

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	150	A
Drain Current-Continuous($T_c = 100^\circ\text{C}$)	$I_D (100^\circ\text{C})$	105	A
Pulsed Drain Current	I_{DM}	600	A
Power Dissipation	P_D	200	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.625	$^\circ\text{C}/\text{W}$
Single pulse avalanche energy	E_{AS}	819	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics ($T_A=25^\circ\text{C}$, 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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	2.8	4	V
Drain-source on-resistance ¹⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		2.8	3.1	m Ω
Forward transconductance ¹⁾	g_{FS}	$V_{DS} = 5V, I_D = 20A$	50			S
Dynamic characteristics ²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$		4500		pF
Output Capacitance	C_{oss}			965		
Reverse Transfer Capacitance	C_{rss}			24		
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 20A$		70		nC
Gate-Source Charge	Q_{gs}			18.6		
Gate-Drain Charge	Q_{gd}			15.3		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 20A, R_{GEN} = 4.7\Omega$		6		nS
Turn-on rise time	t_r			11		
Turn-off delay time	$t_{d(off)}$			23		
Turn-off fall time	t_f			3		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I_S				150	A
Diode Forward voltage	V_{DS}	$V_{GS} = 0V, I_S = 150A$			1.2	V
Reverse Recovery Time	t_{rr}	$T_J = 25^{\circ}C, I_F = I_S$		50		nS
Reverse Recovery Charge	Q_{rr}	$di/dt = 100A/\mu s^{1)}$		66		nC

Notes:

1) Pulse Test: Pulse Width < 300 μs , Duty Cycle $\leq 2\%$.

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

Typical Characteristics

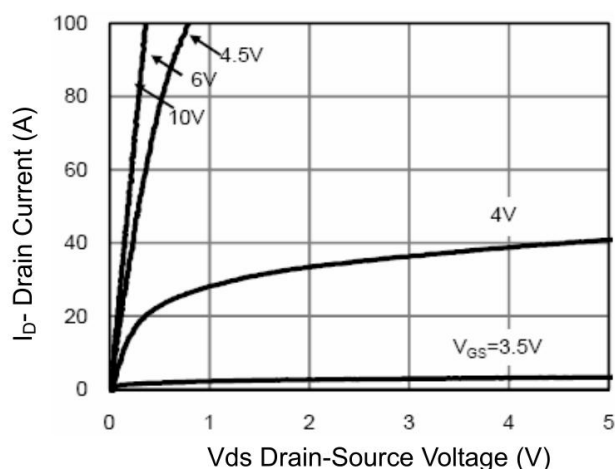


Figure 1 Output Characteristics

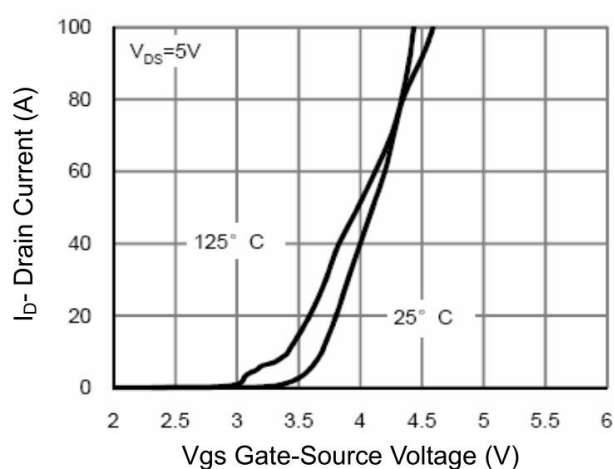


Figure 2 Transfer Characteristics

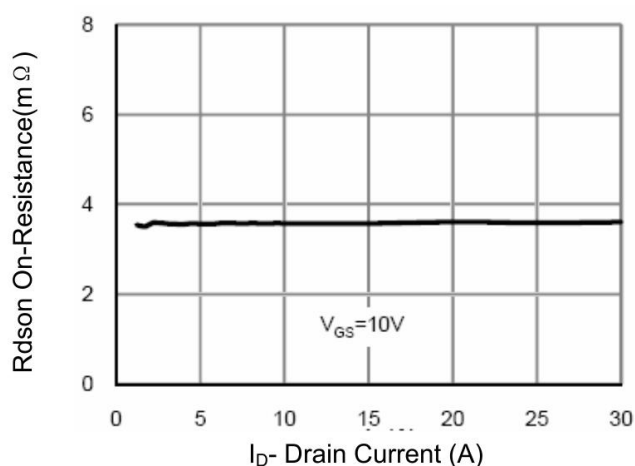


Figure 3 Rdson- Drain Current

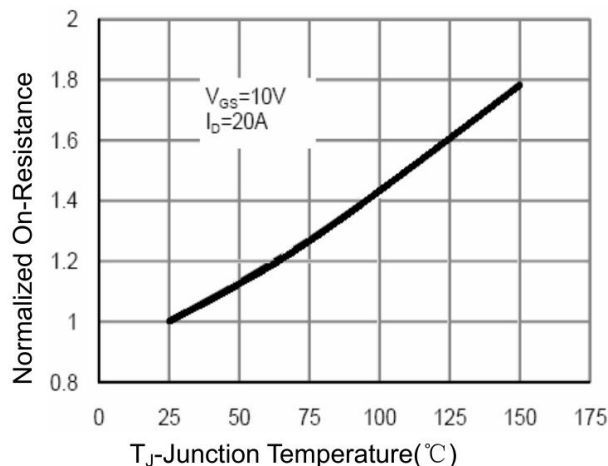


Figure 4 Rdson-Junction Temperature

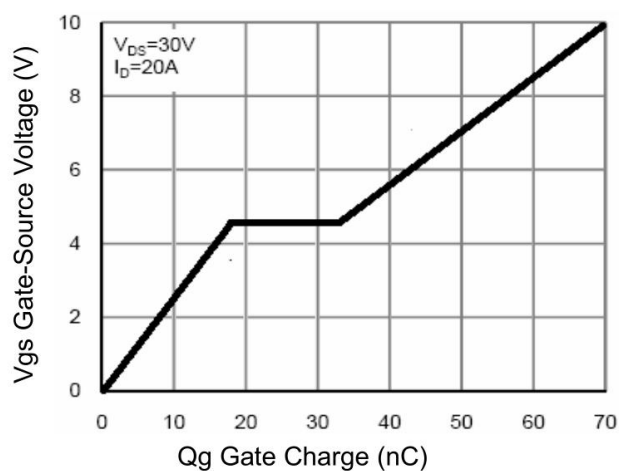


Figure 5 Gate Charge

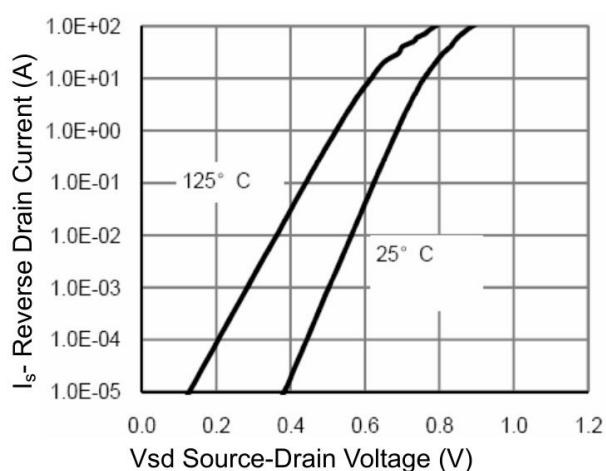


Figure 6 Source- Drain Diode Forward

Typical Characteristics

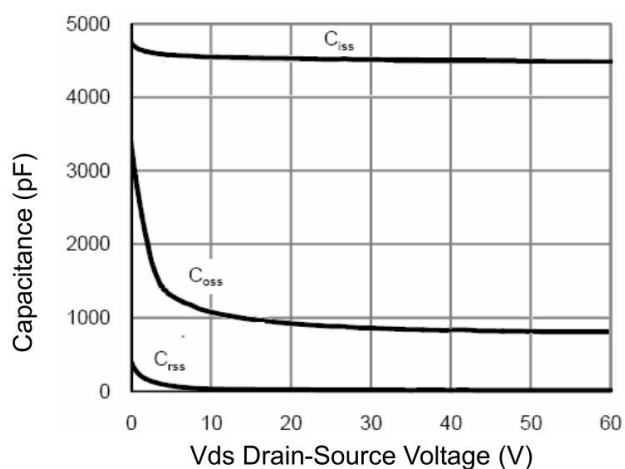


Figure 7 Capacitance vs Vds

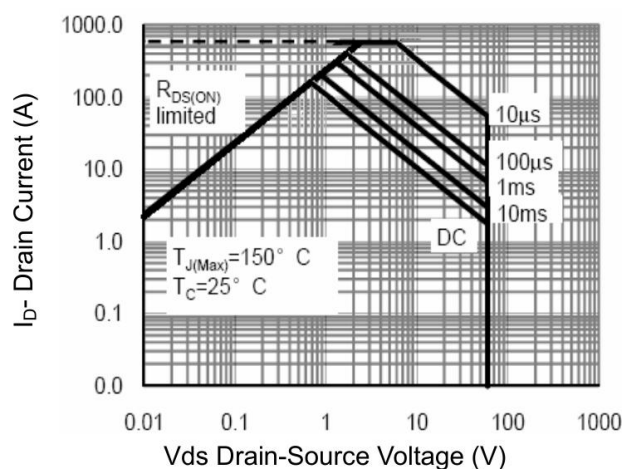


Figure 8 Safe Operation Area

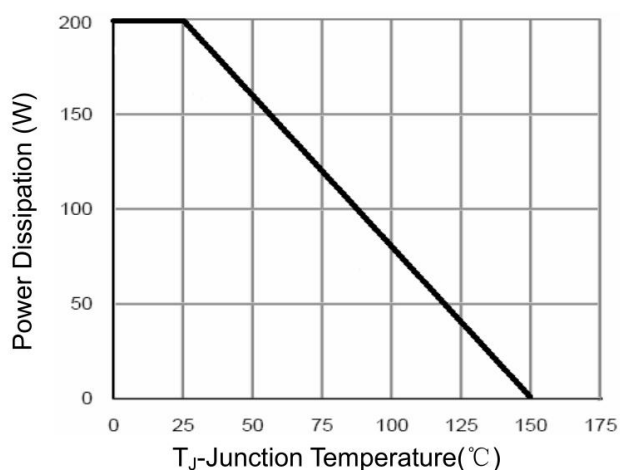


Figure 9 Power De-rating

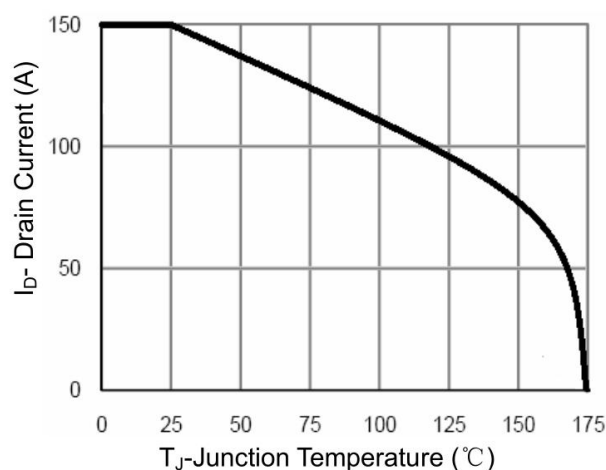


Figure 10 Current De-rating

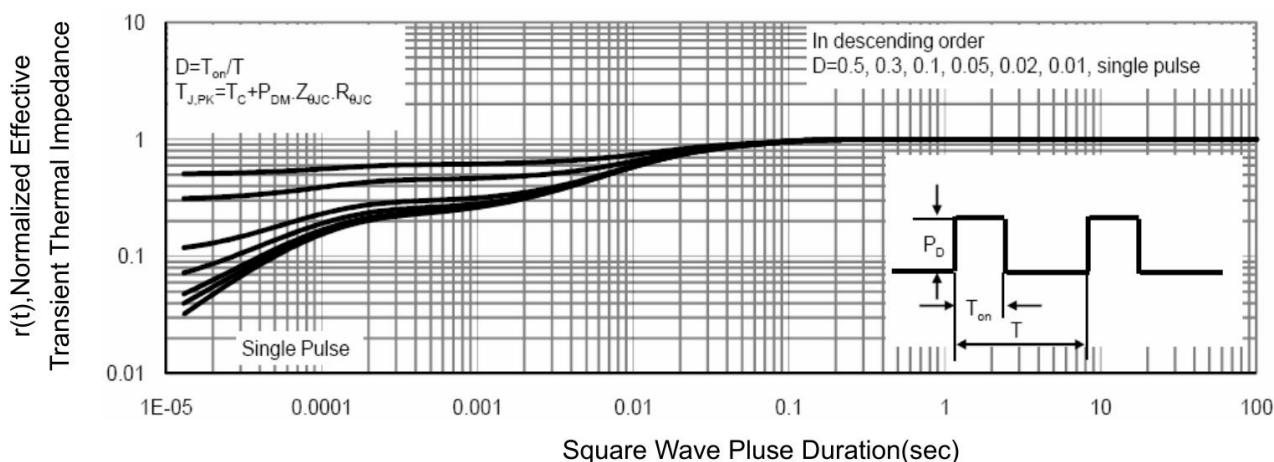
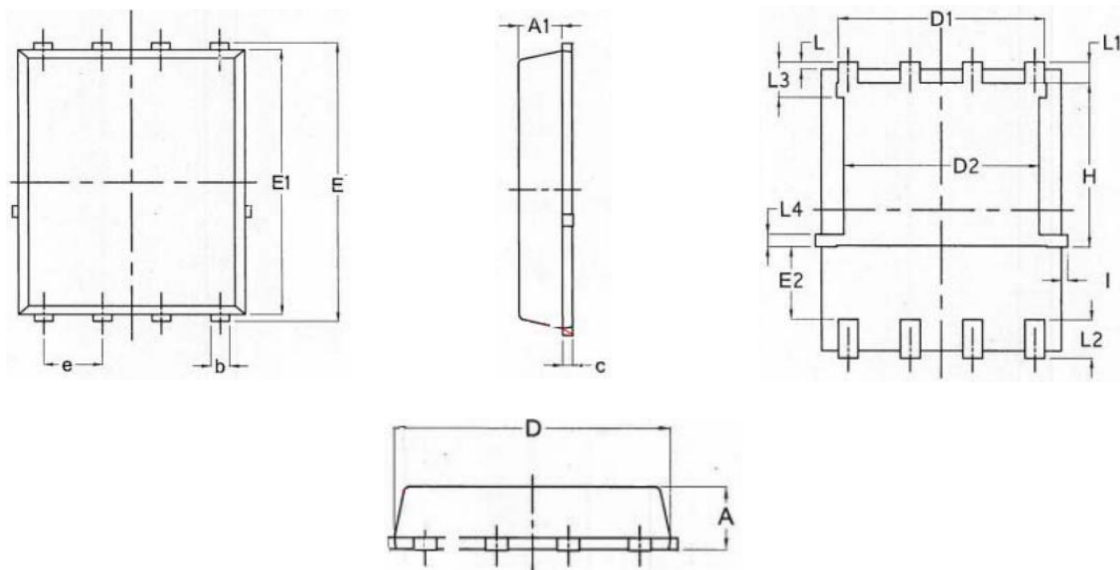


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.170	0.035	0.046
A1	0.824	0.970	0.032	0.038
b	0.330	0.500	0.013	0.020
C	0.150	0.250	0.006	0.010
D	4.800	5.000	0.189	0.197
D1	3.910	4.360	0.154	0.172
D2	3.850	4.150	0.152	0.163
e	1.270BSC		0.050BSC	
E	5.900	6.150	0.232	0.242
E1	5.650	5.850	0.222	0.230
E2	1.100	-	0.043	-
L	0.050	0.250	0.002	0.010
L1	0.380	0.500	0.015	0.020
L2	0.510	0.860	0.020	0.034
L3	0.550	0.850	0.022	0.034
L4	0.100	0.400	0.004	0.016
H	3.250	3.580	0.128	0.141
I	0.000	0.180	0.000	0.007