

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-60V	28mΩ@-10V	-50A

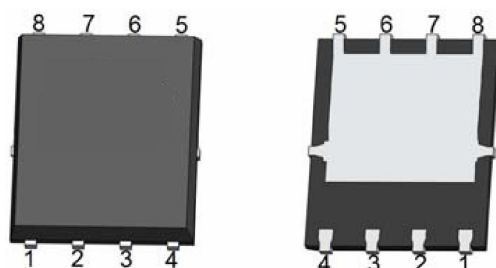
Feature

- High density cell design for ultra low Rdson
- Very low on-resistance $R_{DS(on)}$
- Good stability and uniformity with high E_{AS}
- Suffix "-Q1" for AEC-Q101

Application

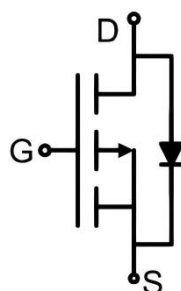
- High side switch for full bridge converter
- DC/DC converter for LCD display

Package

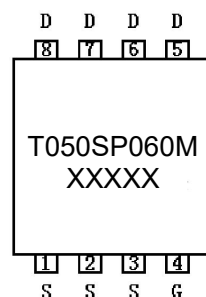


PDFN5*6-8L

Circuit diagram



Marking



Absolute maximum ratings (T_c=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	I _D	-50	A
Continuous Drain Current (T _c =100°C)	I _D (100°C)	-35	A
Pulsed Drain Current ¹⁾	I _{DM}	-200	A
Single Pulse Avalanche Energy ⁴⁾	E _{AS}	273	mJ
Power Dissipation	P _D	100	W
Thermal Resistance Junction to Case ²⁾	R _{θJC}	1.25	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_c=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 ³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-2	-2.6	-3.5	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} =-10V, I _D =-20A		23	28	mΩ
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, f =1MHz		3016.8		pF
Output Capacitance	C _{oss}			180		
Reverse Transfer Capacitance	C _{rss}			126		
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-10V I _D =-20A		49.8		nC
Gate-Source Charge	Q _{gs}			10.6		
Gate-Drain Charge	Q _{gd}			13.6		
Turn-on delay time	t _{d(on)}	V _{DS} =-30V, V _{GS} =-10V R _L =1.5Ω, R _G =3Ω		12		nS
Turn-on rise time	t _r			15		
Turn-off delay time	t _{d(off)}			38		
Turn-off fall time	t _f			15		
Source-Drain Diode characteristics						
Diode Forward Current ²⁾	I _S				-50	A
Diode Forward voltage ³⁾	V _{SD}	V _{GS} =0V, I _S =-20A			-1.2	V
Reverse recover time	T _{rr}	I _S =-20A, di/dt =-100A/us ³⁾		47		nS
Reverse recovery charge	Q _{rr}	T _J =25°C		53		nC

Notes:

- 1) Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2) Surface Mounted on FR4 Board, t ≤ 10 sec.
- 3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 4) EAS condition: T_J = 25°C, V_{DS} = -20V, V_G = -10V, L = 0.5mH, R_G = 25Ω.
- 5) Guaranteed by design, not subject to production.

Typical Characteristics

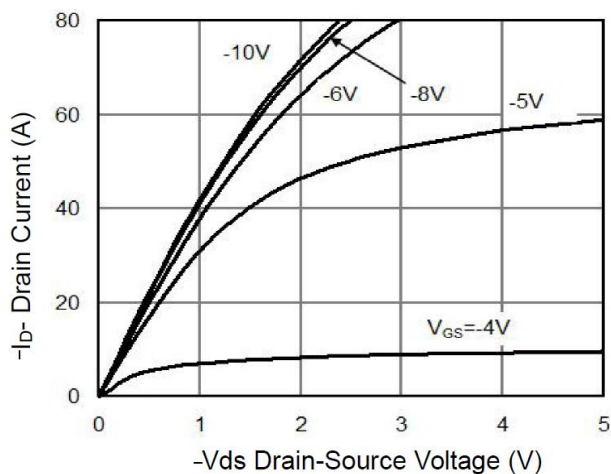


Figure 1 Output Characteristics

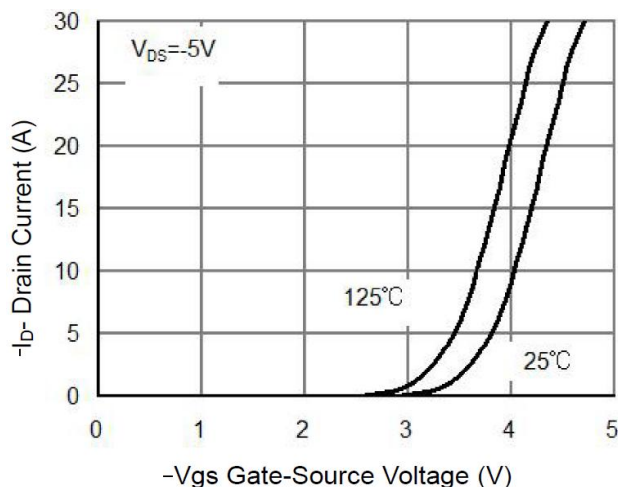


Figure 2 Transfer Characteristics

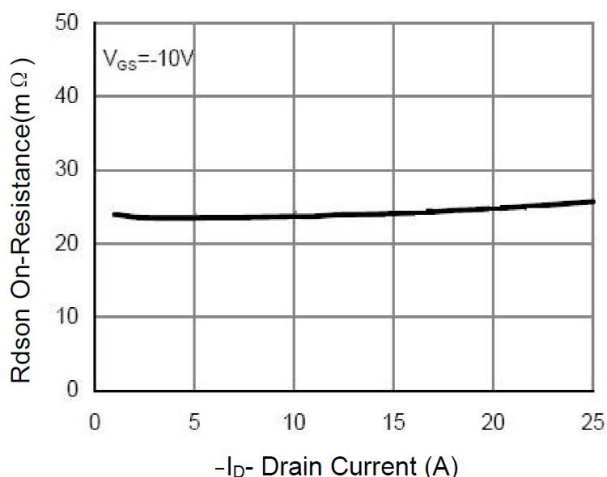


Figure 3 Rdson- Drain Current

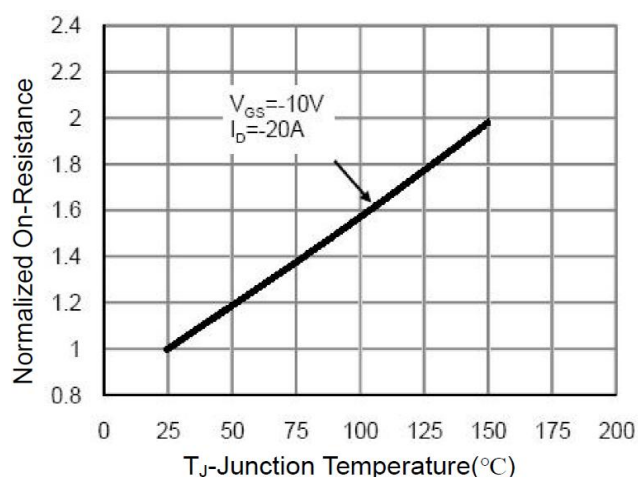


Figure 4 Rdson-Junction Temperature

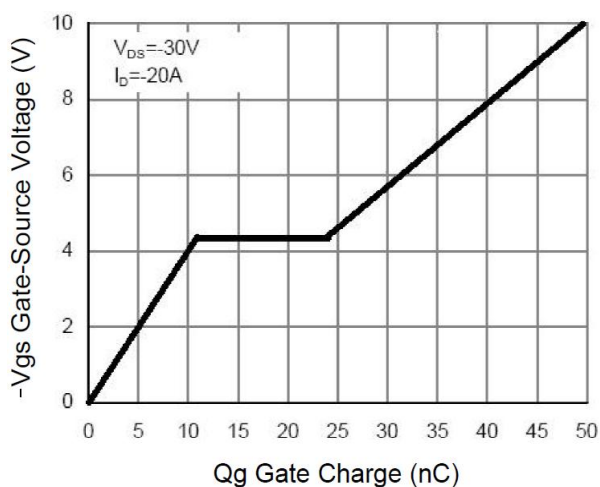


Figure 5 Gate Charge

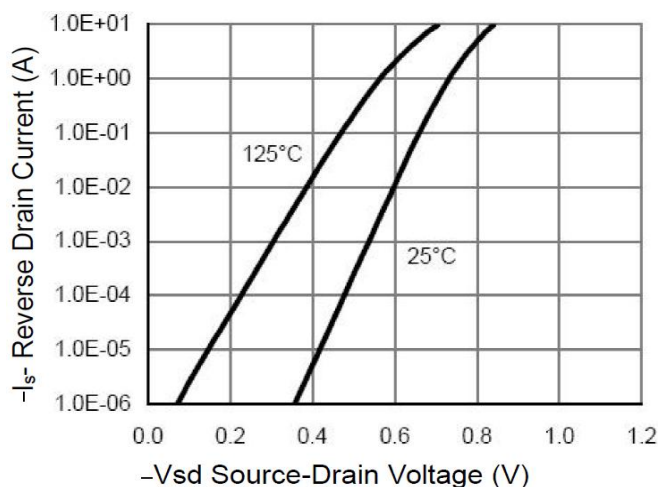


Figure 6 Source- Drain Diode Forward

Typical Characteristics

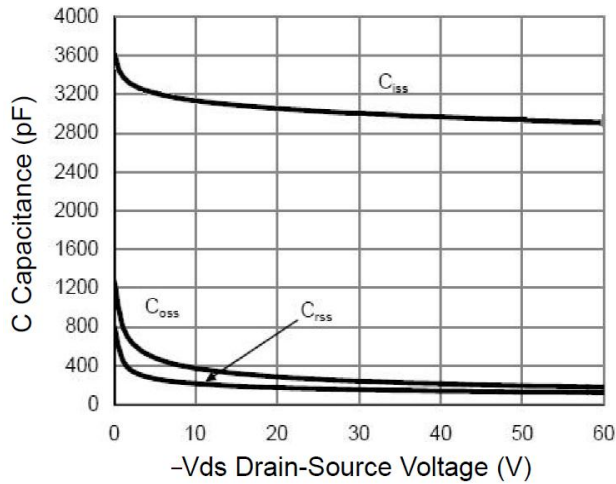


Figure 7 Capacitance vs Vds

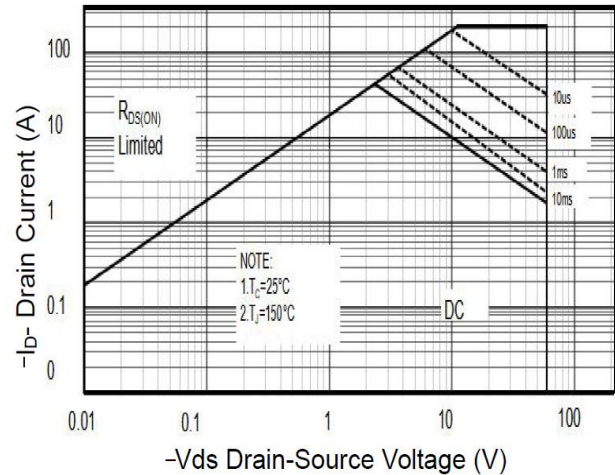


Figure 8 Safe Operation Area

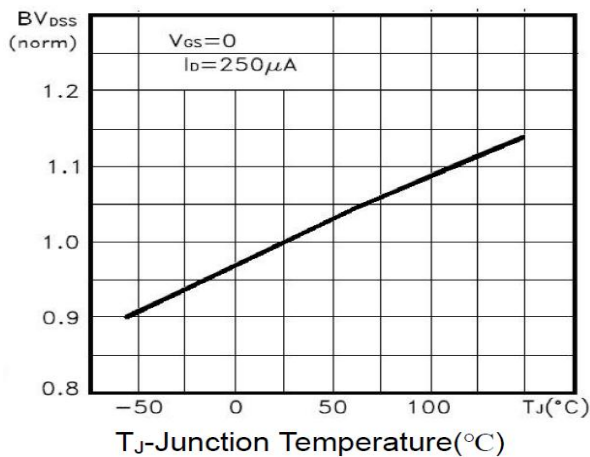


Figure 9 BV_{DSS} vs Junction Temperature

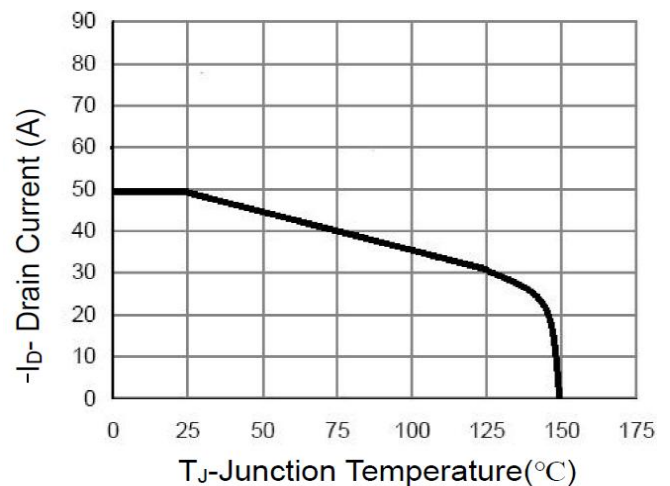


Figure 10 ID Current De-rating

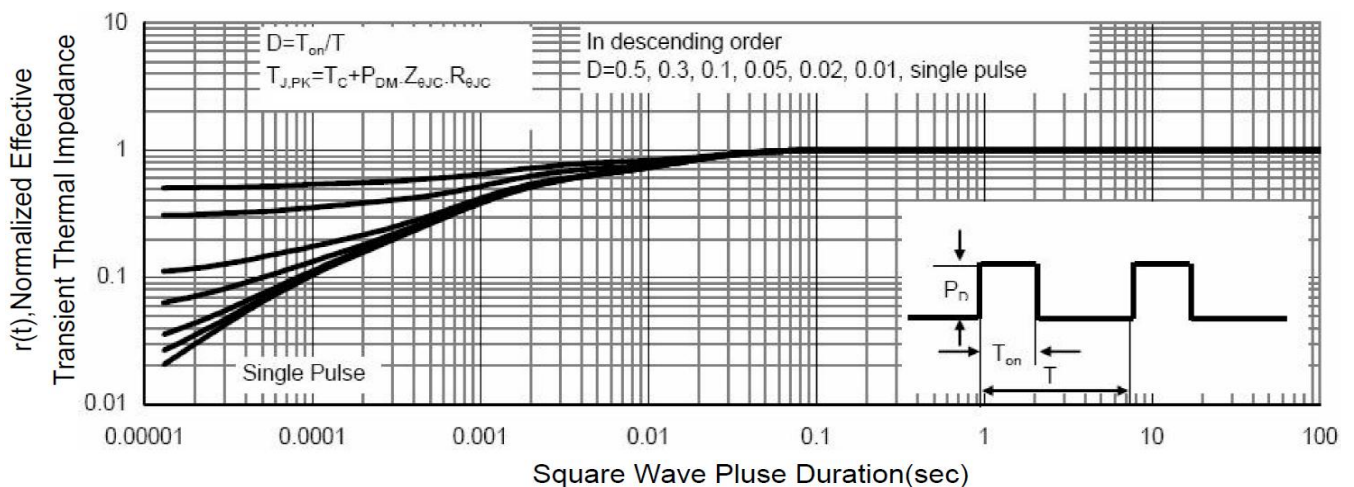
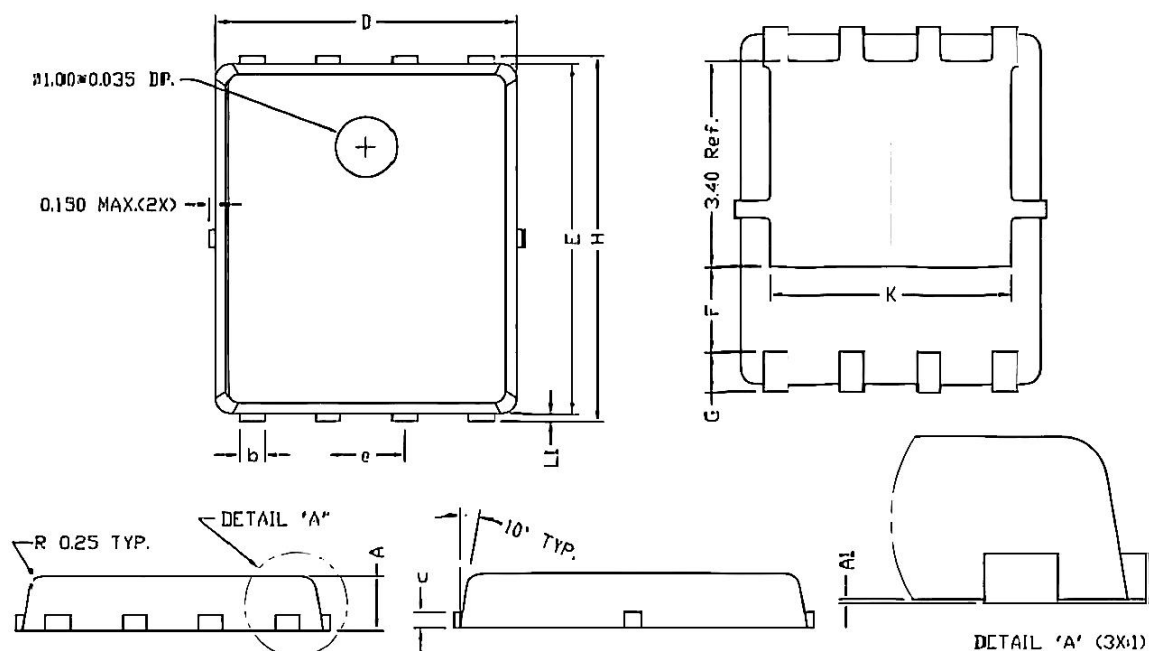


Figure 11 Normalized Maximum Transient Thermal Impedance

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.800	1.000	0.031	0.039
A1	0.000	0.050	0.000	0.002
b	0.350	0.490	0.014	0.019
c	0.254 REF.		0.010 REF.	
D	4.900	5.100	0.193	0.201
F	1.400 REF.		0.055 REF.	
E	5.700	5.900	0.224	0.232
e	1.270 BSC.		0.050 BSC.	
H	5.950	6.200	0.234	0.244
L1	0.100	0.180	0.004	0.007
G	0.600 REF.		0.024 REF.	
K	4.000 REF.		0.157 REF.	