

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	12.9mΩ@10V	46A
	17.8mΩ@4.5V	

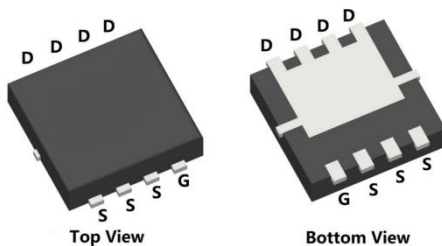
Feature

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

Application

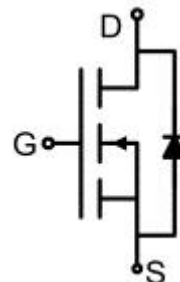
- DC/DC converter
- Ideal for high-frequency switching
- Synchronous rectification

Package

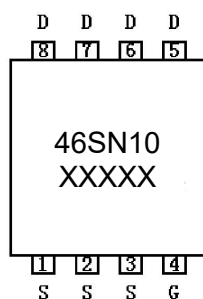


PDFN3.3*3.3-8L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾	I _D	46	A
Continuous Drain Current ¹⁾ (T _c =100°C)	I _D (100°C)	32	A
Pulsed Drain Current	I _{DM}	184	A
Single Pulse Avalanche Energy ⁴⁾	E _{AS}	156	mJ
Power Dissipation	P _D	56	W
Thermal Resistance Junction to Case ²⁾	R _{θJC}	2.23	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	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	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V, 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	1.1	1.8	2.5	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} =10V, I _D =23A		12.1	12.9	mΩ
		V _{GS} =4.5V, I _D =23A		15.8	17.8	
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		2050		pF
Output Capacitance	C _{oss}			180		
Reverse Transfer Capacitance	C _{rss}			21		
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =23A		42		nC
Gate-Source Charge	Q _{gs}			7.8		
Gate-Drain Charge	Q _{gd}			11		
Turn-on delay time	t _{d(on)}	V _{DS} =50V, V _{GS} =10V, I _D =23A R _G =3Ω		16		nS
Turn-on rise time	t _r			18		
Turn-off delay time	t _{d(off)}			32		
Turn-off fall time	t _f			10		
Source-Drain Diode characteristics						
Diode Forward Current ²⁾	I _S				46	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =23A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =23A, di/dt =100A/μs ³⁾		45		nS
Reverse Recovery Charge	Q _{rr}	T _J =25°C		95		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_{DD} = 50V, V_G = 10V, L = 0.5mH, R_G = 25Ω.
- 5) Guaranteed by design, not subject to production.

Typical Characteristics

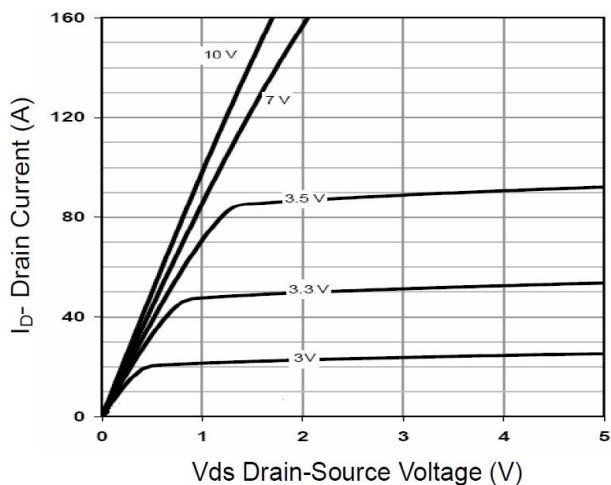


Figure 1 Output Characteristics

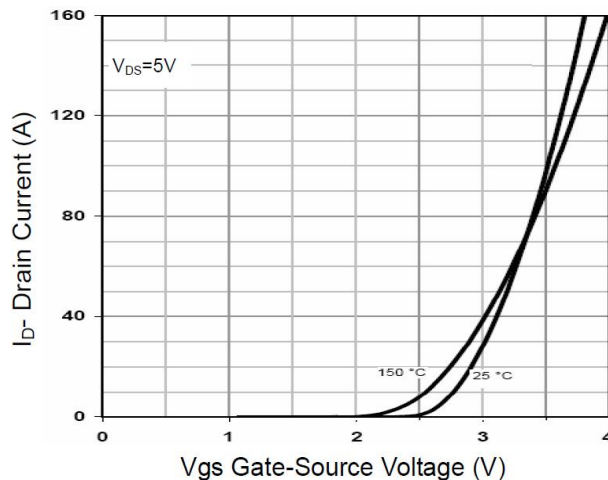


Figure 2 Transfer Characteristics

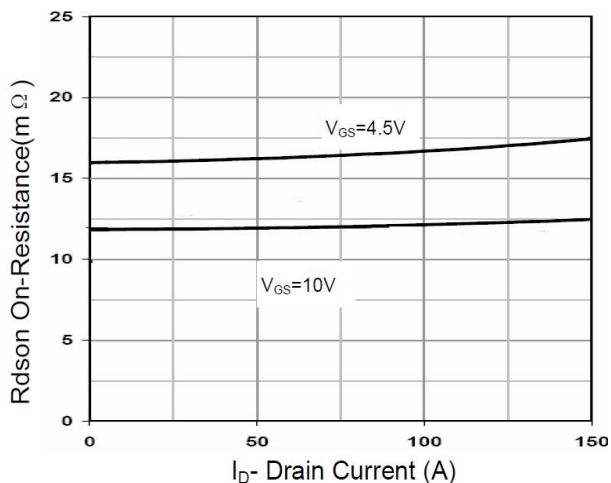


Figure 3 Rdson- Drain Current

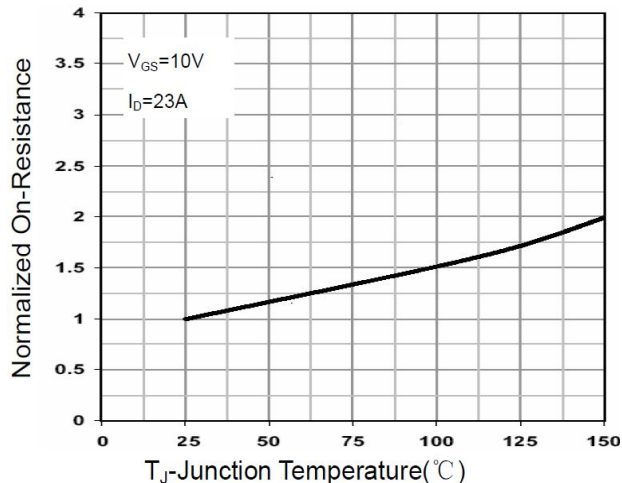


Figure 4 Rdson-Junction Temperature

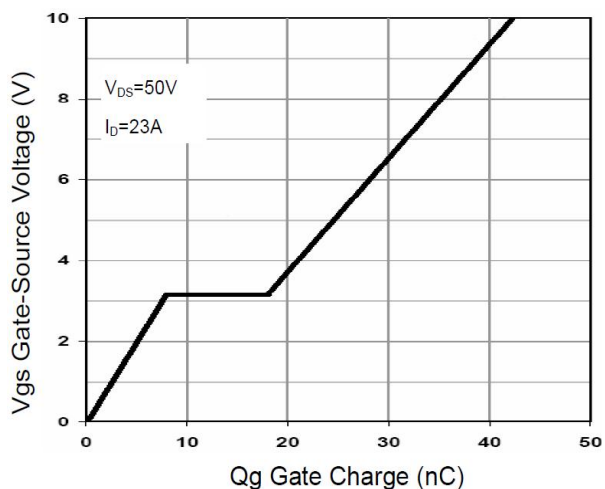


Figure 5 Gate Charge

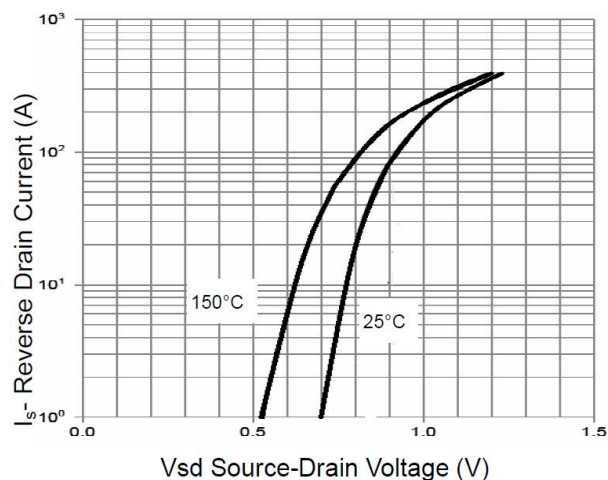


Figure 6 Source- Drain Diode Forward

Typical Characteristics

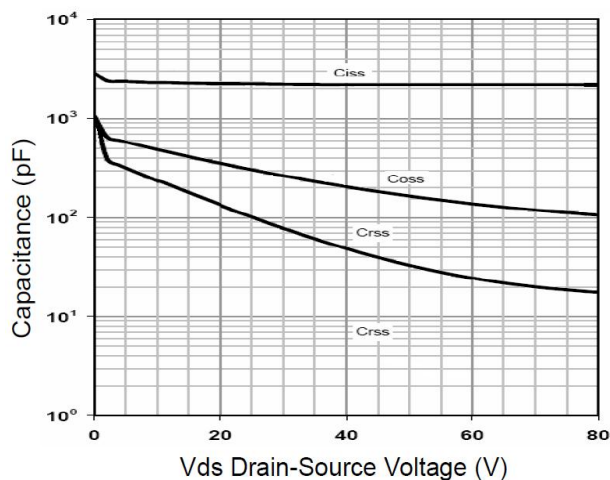


Figure 7 Capacitance vs Vds

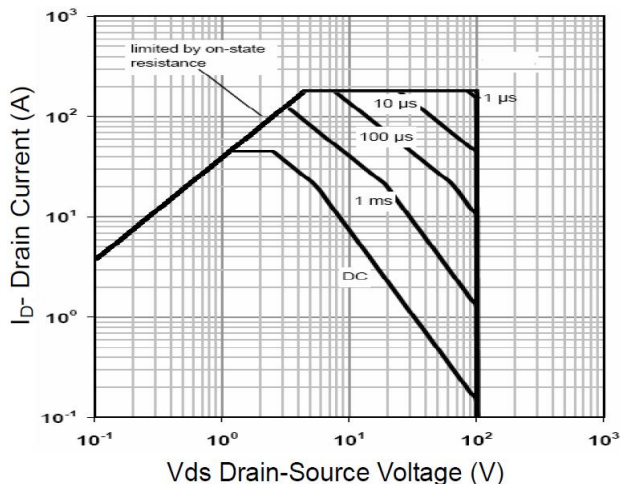


Figure 8 Safe Operation Area

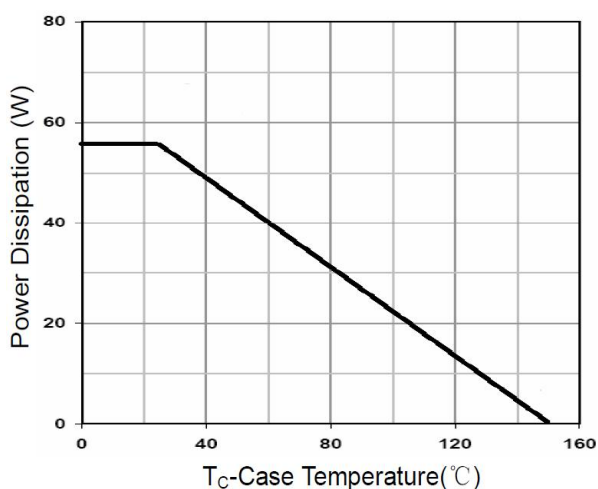


Figure 9 Power De-rating

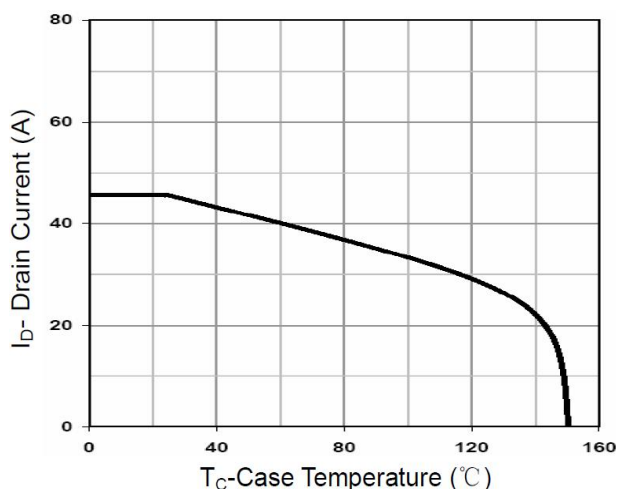


Figure 10 Current De-rating

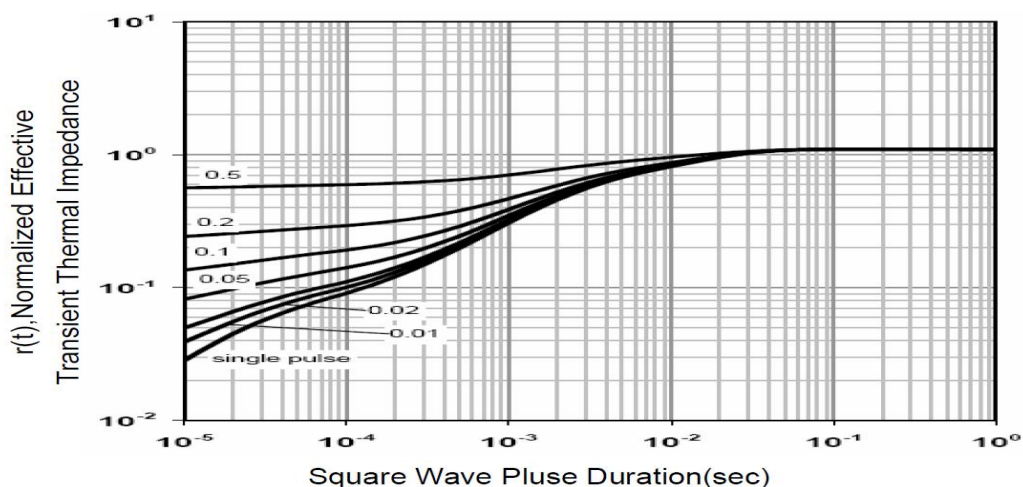
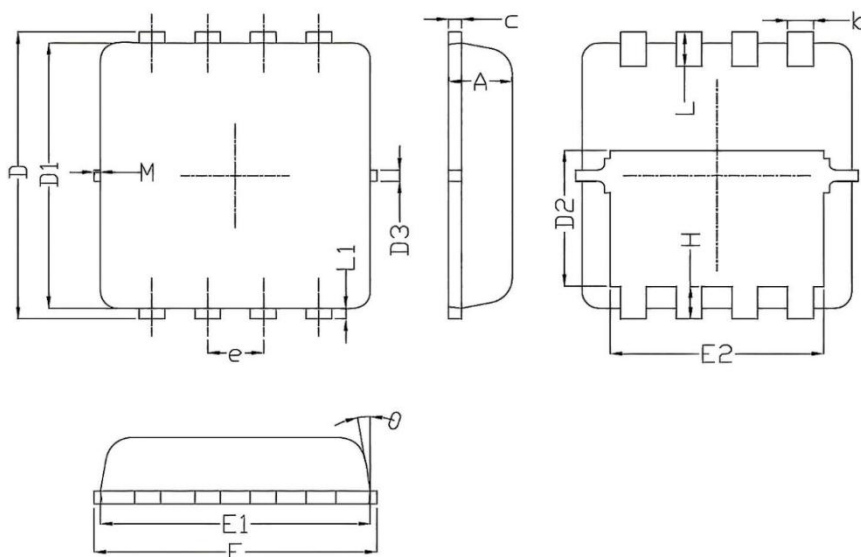


Figure 11 Normalized Maximum Transient Thermal Impedance

PDFN3.3*3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.014
c	0.100	0.250	0.004	0.010
D	3.250	3.450	0.128	0.136
D1	3.000	3.200	0.118	0.126
D2	1.780	1.980	0.070	0.078
D3	0.130 RFE.		0.005 RFE.	
E	3.100	3.300	0.005	0.130
E1	3.000	3.200	0.118	0.126
E2	2.390	2.590	0.094	0.102
e	0.650 BSC.		0.026 BSC.	
H	0.300	0.500	0.012	0.020
L	0.300	0.500	0.012	0.020
L1	0.130 RFE.		0.005 RFE.	
M	-	0.150	-	0.006
θ	-	12°	-	12°