

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
85V	4.5mΩ@10V	110A

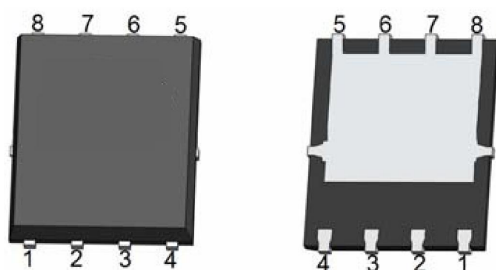
Feature

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

Application

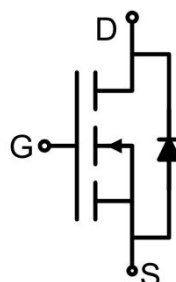
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

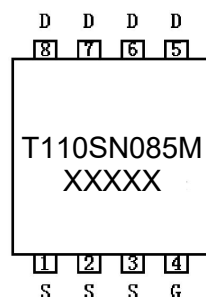


PDFN5*6-8L

Circuit diagram



Marking



Absolute maximum ratings ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	85	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	110	A
Continuous Drain Current ($T_c = 100^{\circ}\text{C}$)	$I_D (100^{\circ}\text{C})$	82	A
Pulsed Drain Current	I_{DM}	440	A
Single pulse avalanche energy ¹⁾	E_{AS}	538	mJ
Power Dissipation	P_D	120	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.04	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_c=25^{\circ}\text{C}$, 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 =250μA	85			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =85V, 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	2	3	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		4	4.5	mΩ
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =40V, V _{GS} =0V, f =1MHz		3600		pF
Output Capacitance	C _{oss}			775		
Reverse Transfer Capacitance	C _{rss}			35		
Total Gate Charge	Q _g	V _{DS} =40V, V _{GS} =10V, I _D =20A		61		nC
Gate-Source Charge	Q _{gs}			17		
Gate-Drain Charge	Q _{gd}			16.5		
Turn-on delay time	t _{d(on)}	V _{DS} =40V, V _{GS} =10V, I _D =20A R _G =1.6Ω		26		nS
Turn-on rise time	t _r			16		
Turn-off delay time	t _{d(off)}			60		
Turn-off fall time	t _f			15		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				110	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =55A, di/dt =100A/μs T _J = 25°C		72		nS
Reverse Recovery Charge	Q _{rr}			160		nC

Notes:

 1) EAS condition : $T_J = 25^{\circ}\text{C}, V_{DD} = 40V, V_G = 10V, L = 0.5\text{mH}, R_G = 25\Omega$.

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

Typical Characteristics

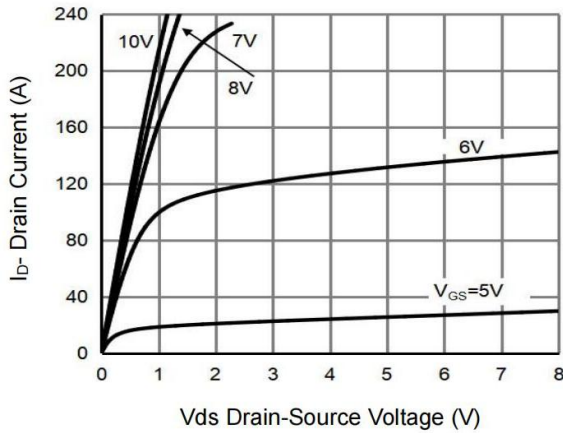


Figure 1 Output Characteristics

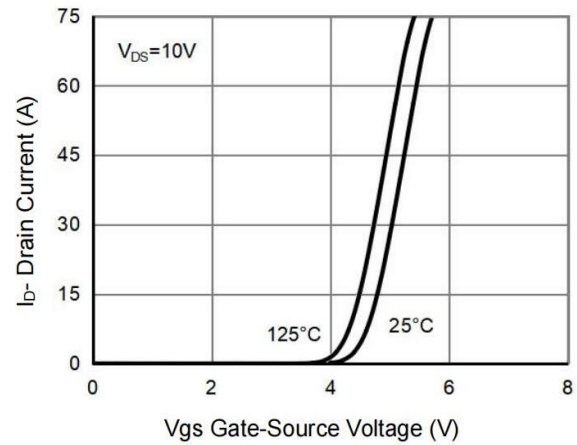


Figure 2 Transfer Characteristics

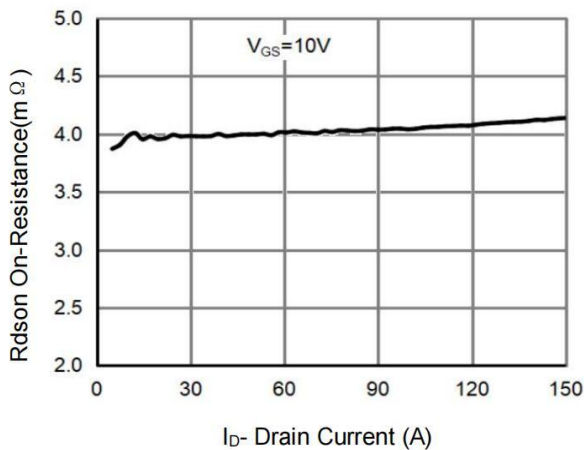


Figure 3 $R_{DS(on)}$ - Drain Current

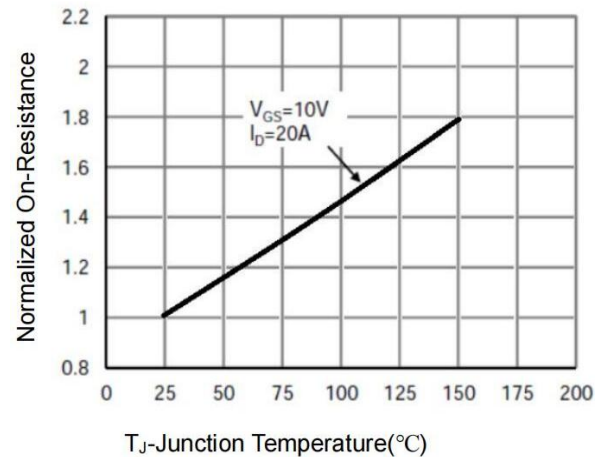


Figure 4 $R_{DS(on)}$ -Junction Temperature

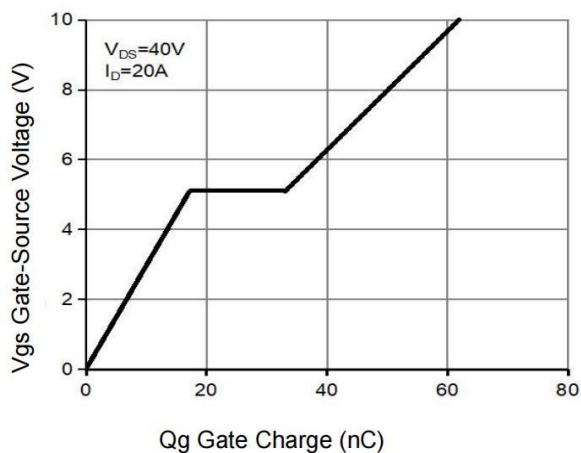


Figure 5 Gate Charge

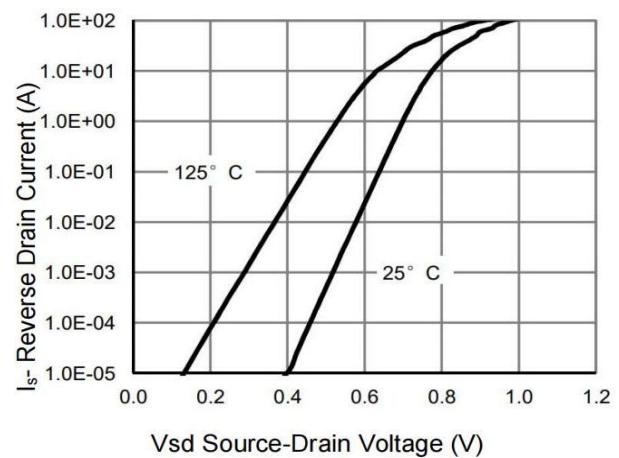


Figure 6 Source- Drain Diode Forward

Typical Characteristics

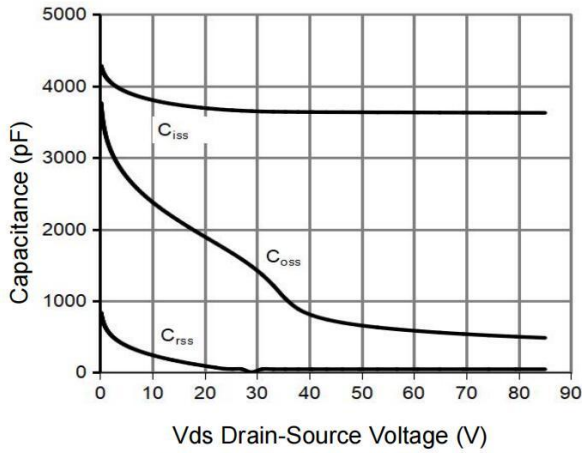


Figure 7 Capacitance vs Vds

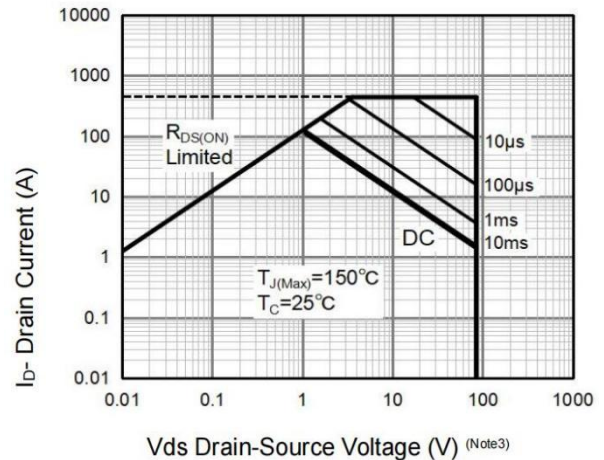


Figure 8 Safe Operation Area

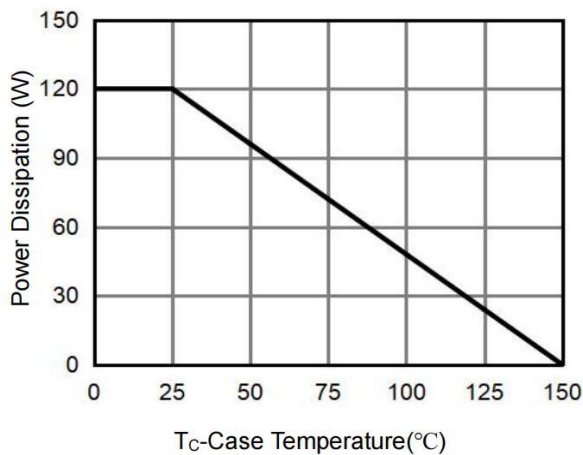


Figure 9 Power De-rating

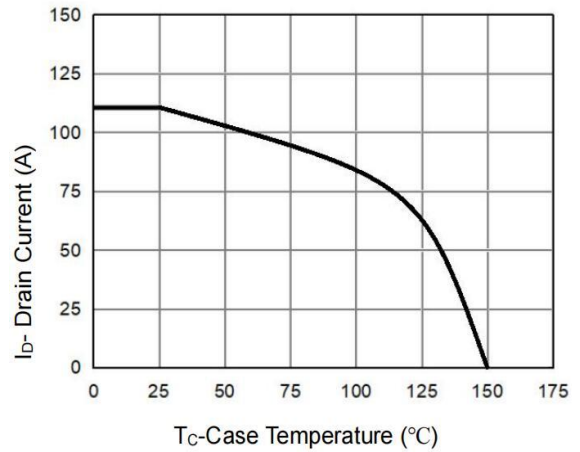


Figure 10 Current De-rating

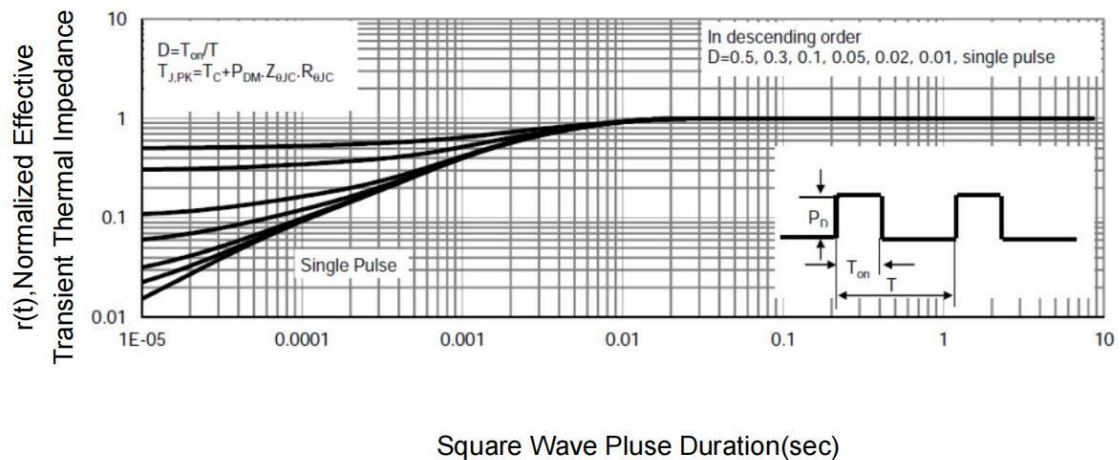
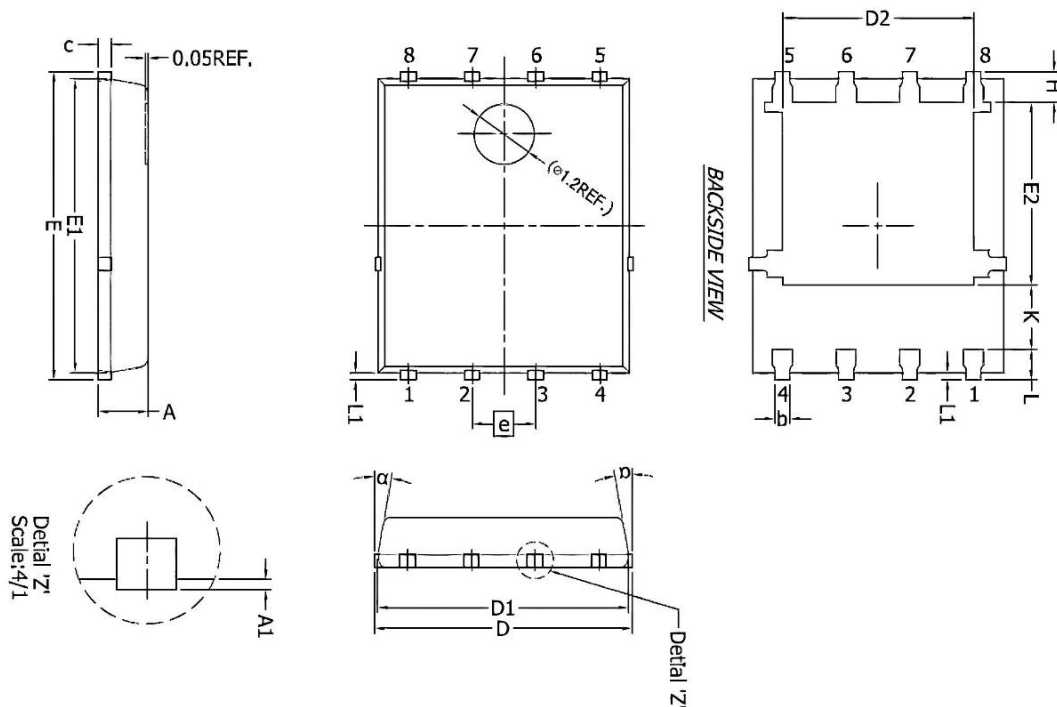


Figure 11 Normalized Maximum Transient Thermal Impedance

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.050	0.000	0.002
b	0.300	0.500	0.012	0.020
c	0.200	0.300	0.008	0.012
D	5.150 BSC.		0.203 BSC.	
D1	5.000 BSC.		0.197 BSC.	
D2	3.760	3.860	0.148	0.152
E	6.150 BSC		0.242 BSC.	
E1	5.800	5.900	0.228	0.232
E2	3.450	3.850	0.136	0.152
e	1.270 BSC.		0.050 BSC.	
H	0.510	0.710	0.020	0.028
K	1.100	-	0.043	-
L	0.510	0.710	0.020	0.028
L1	0.080	0.230	0.003	0.009
α	10°	12°	10°	12°