AT105SN030MQPF-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	3mΩ@10V	105A
	4mΩ@4.5V	

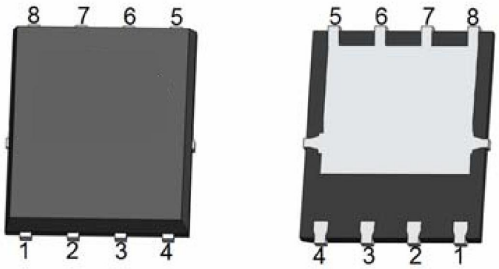
Feature

- Trench power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(on)}$
- Suffix “-Q1” for AEC-Q101

Application

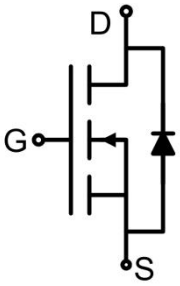
- DC-DC converters
- Power management functions
- Backlighting

Package

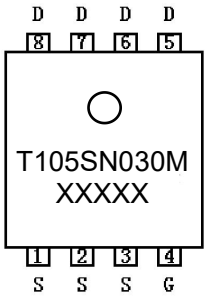


PDFN5*6-8L

Circuit diagram



Marking



Absolute maximum ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	105	A
Continuous Drain Current (T_C=100℃)	I_D (100℃)	66	A
Pulsed Drain Current[1)]	I_{DM}	415	A
Single Pulse Avalanche Energy	E_{AS}	507	mJ
Power Dissipation(T_C=25℃)	P_D	70	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.8	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=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	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V, 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	1	1.5	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		2.45	3	mΩ
		V_{GS} =4.5V, I_D =15A		2.9	4	
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =15V, V_{GS} =0V, f =1MHz		4401		pF
Output Capacitance	C_{oss}			581		
Reverse Transfer Capacitance	C_{rss}			439		
Total Gate Charge	Q_g	V_{DS} =20V, V_{GS} =10V, I_D =20A		49.5		nC
Gate-Source Charge	Q_{gs}			10.4		
Gate-Drain Charge	Q_{gd}			8.9		
Turn-on delay time	$t_{d(on)}$	V_{DS} =15V, V_{GS} =10V, I_D =2A R_G =3Ω		13		nS
Turn-on rise time	t_r			22		
Turn-off delay time	$t_{d(off)}$			63		
Turn-off fall time	t_f			33		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				105	A
Diode Forward Voltage	V_{SD}	V_{GS} =0V, I_S =20A			1.2	V
Reverse Recover Time	T_{rr}	I_S =20A, di/dt =-500A/us		23		nS
Reverse Recovery Charge	Q_{rr}			7.5		nC

Notes:

1) Pulse Test: Pulse Width ≤300us, Duty cycle ≤2%.

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

Typical Characteristics

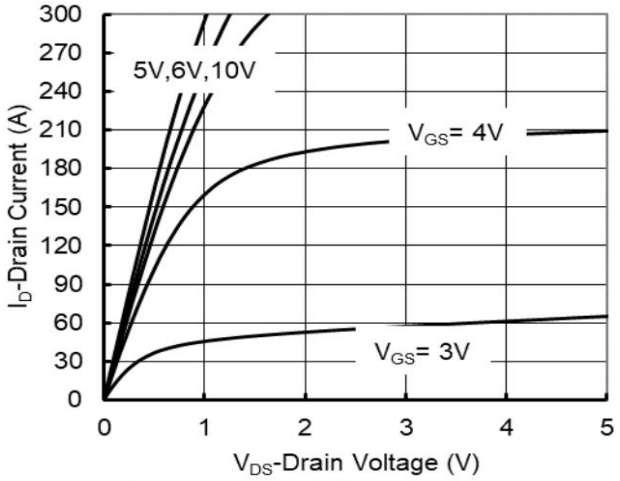


Figure 1. Output Characteristics

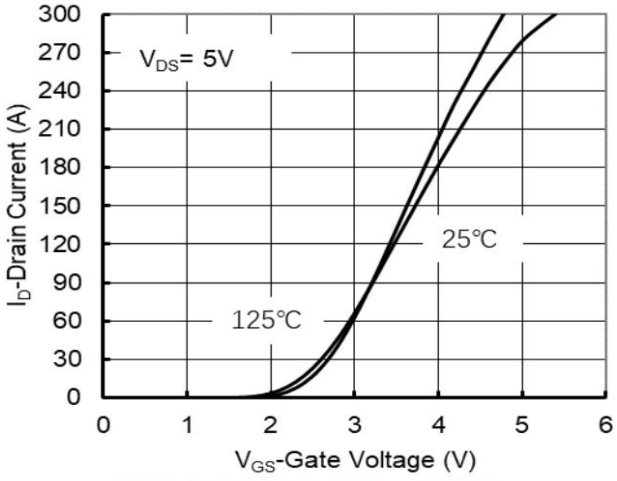


Figure 2. Transfer Characteristics

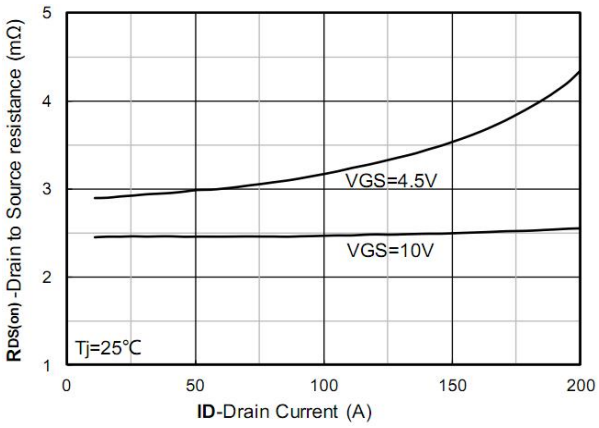


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

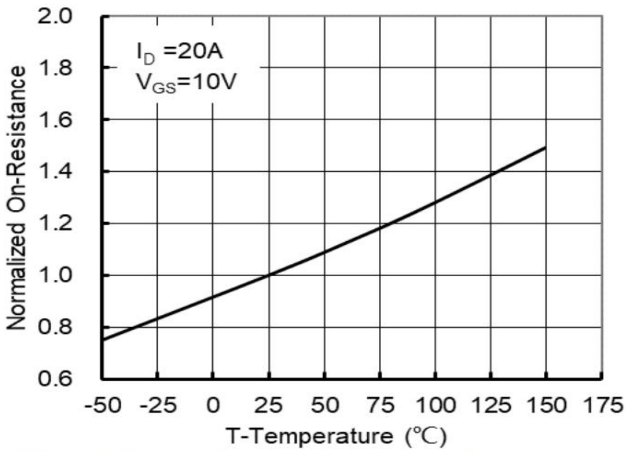


Figure 4. On-Resistance vs. Junction Temperature

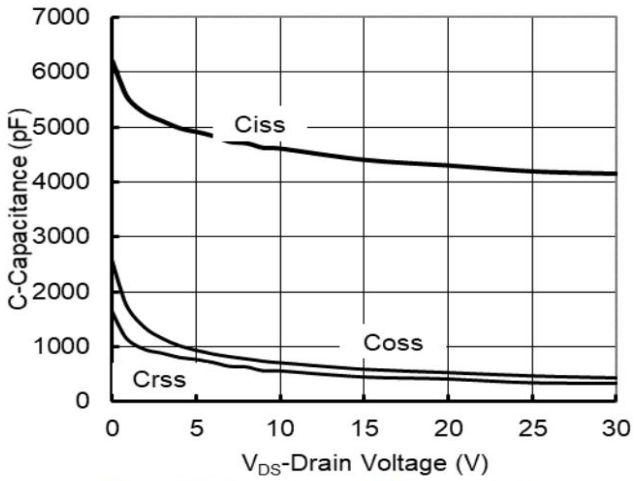


Figure 5. Capacitance Characteristics

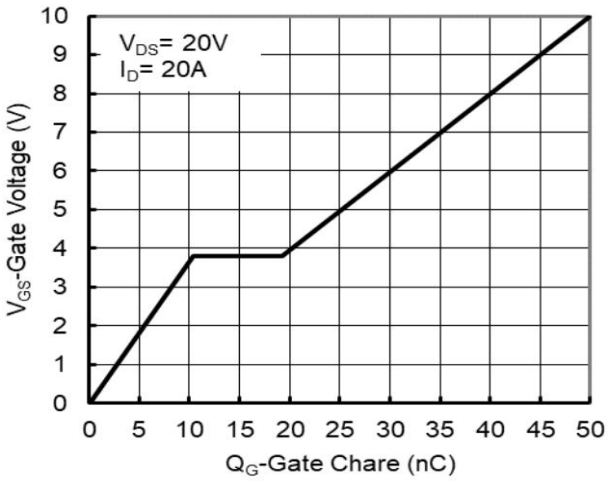


Figure 6. Gate Charge

Typical Characteristics

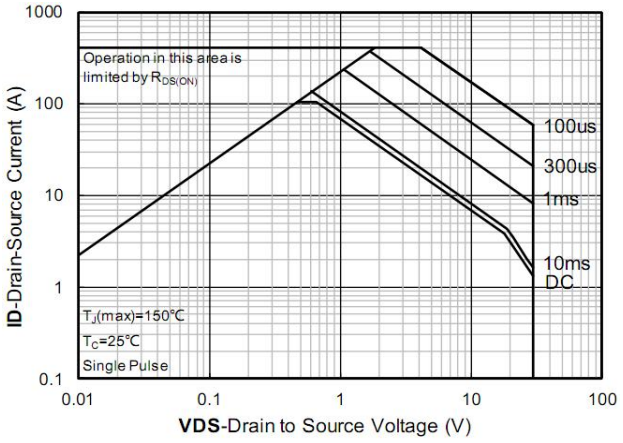


Figure 7. Safe Operation Area

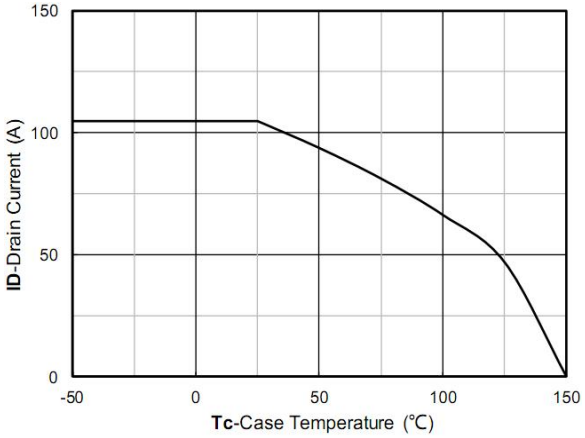


Figure 8. Maximum Continuous Drain Current vs Case Temperature

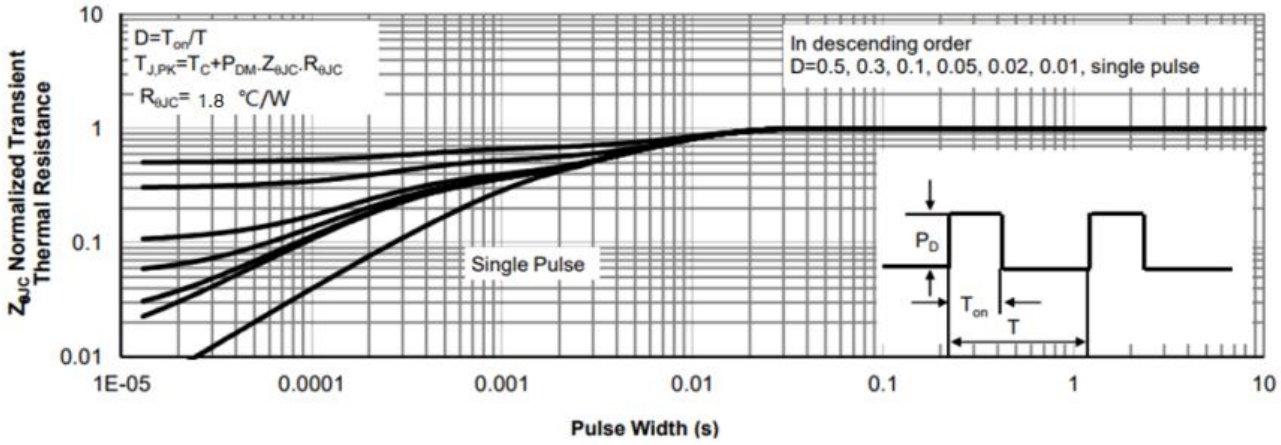
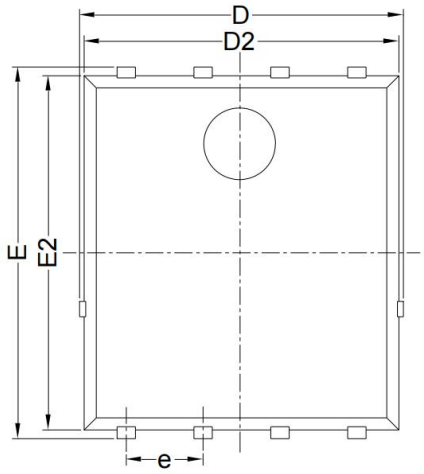
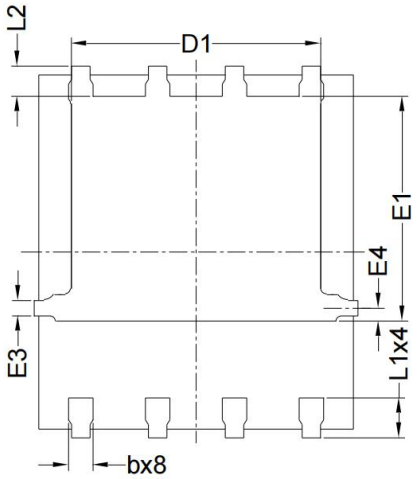


Figure 9. Normalized Maximum Transient Thermal Impedance

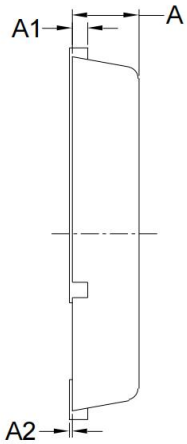
PDFN5*6-8L Package Information



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
D	5.150	5.550	0.203	0.219
E	5.950	6.350	0.234	0.250
A	1.000	1.200	0.039	0.047
A1	0.254 BSC.		0.010 BSC.	
A2	0.000	0.100	0.000	0.004
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	0.213
E2	5.660	6.060	0.223	0.239
E3	0.254 REF.		0.010 REF.	
E4	0.210 REF.		0.008 REF.	
L1	0.560	0.760	0.022	0.030
L2	0.500 BSC.		0.020 BSC.	
b	0.310	0.510	0.012	0.020
e	1.270 BSC.		0.050 BSC.	