AT105SN040MPF

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	3.8mΩ@10V	105A
	5.5mΩ@4.5V	

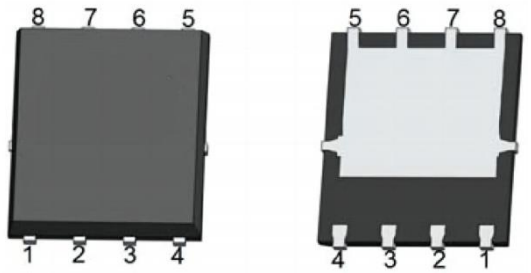
Feature

- Fast switching
- Surface mount package

Application

- DC-DC converter
- Motor control

Package



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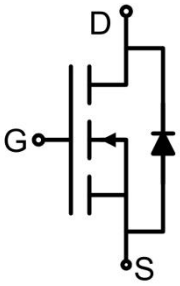
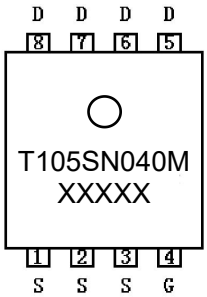
Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	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℃)	70	A
Pulsed Drain Current	I_{DM}	420	A
Single Pulse Avalanche Energy[1)]	E_{AS}	462	mJ
Power Dissipation (T_C =25℃)	P_D	83	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.5	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25℃, unless otherwise noted)

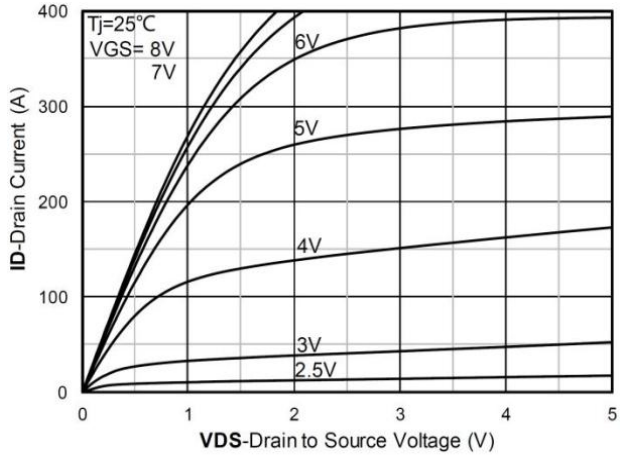
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =250μA	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =24V, V_{GS} =0V, T_J =25℃			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	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		3	3.8	mΩ
		V_{GS} =4.5V, I_D =10A		4	5.5	
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =20V, V_{GS} =0V, f =1MHz		5595		pF
Output Capacitance	C_{oss}			421		
Reverse Transfer Capacitance	C_{rss}			380		
Total Gate Charge	Q_g	V_{DS} =20V, V_{GS} =10V, I_D =30A		65		nC
Gate-Source Charge	Q_{gs}			11		
Gate-Drain Charge	Q_{gd}			16		
Turn-on delay time	$t_{d(on)}$	V_{DS} =20V, V_{GS} =10V, I_D =30A R_G =3Ω		12		nS
Turn-on rise time	t_r			16		
Turn-off delay time	$t_{d(off)}$			37		
Turn-off fall time	t_f			14		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				105	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =1A, T_J =25℃			1.2	V
Reverse recover time	T_{rr}	I_S =30A, di/dt =-100A/us T_J =25℃		23		nS
Reverse recovery charge	Q_{rr}			10		nC

Notes:

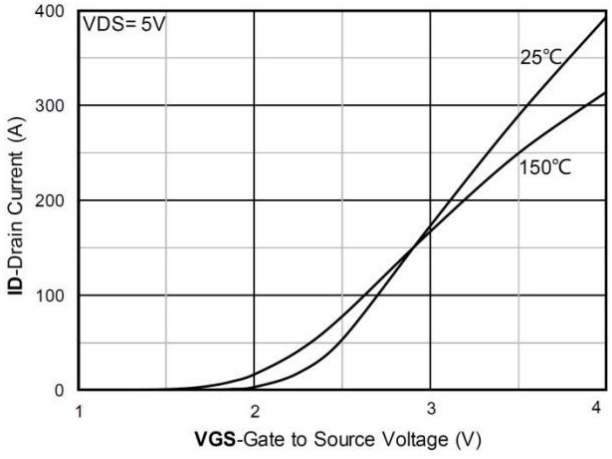
1) The EAS test condition is V_{DD}=20V,V_{GS}=10V,L=0.5mH,R_G=25Ω.

2) Guaranteed by design, not subject to production.

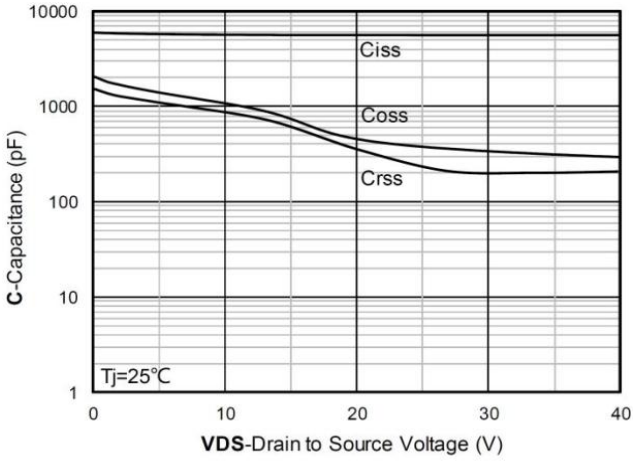
Typical Characteristics



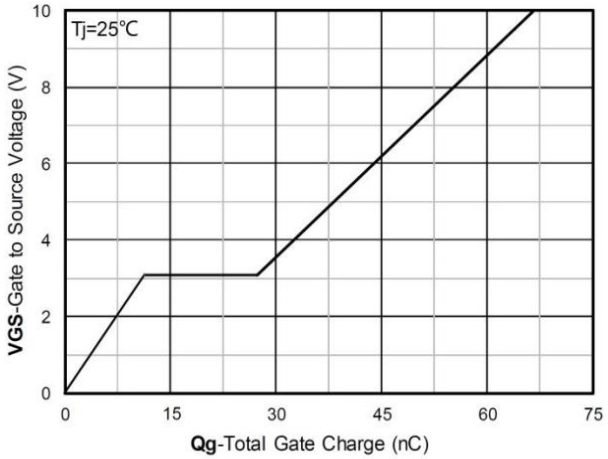
Output Characteristics



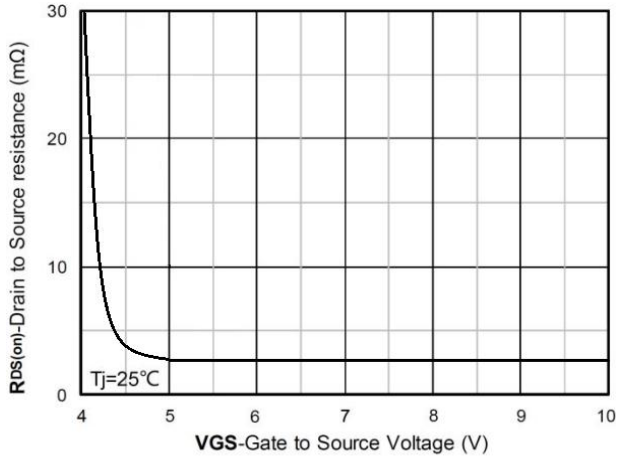
Transfer Characteristics



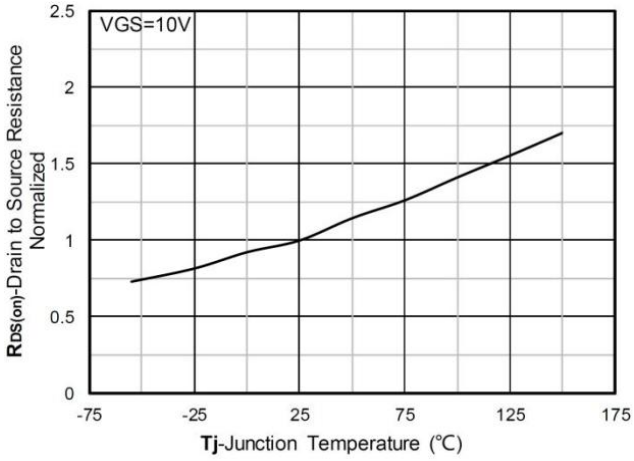
Capacitance Characteristics



Gate Charge

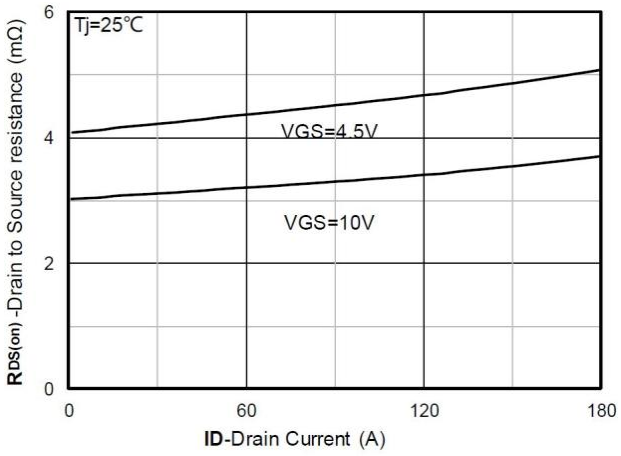


On-Resistance vs Gate to Source Voltage

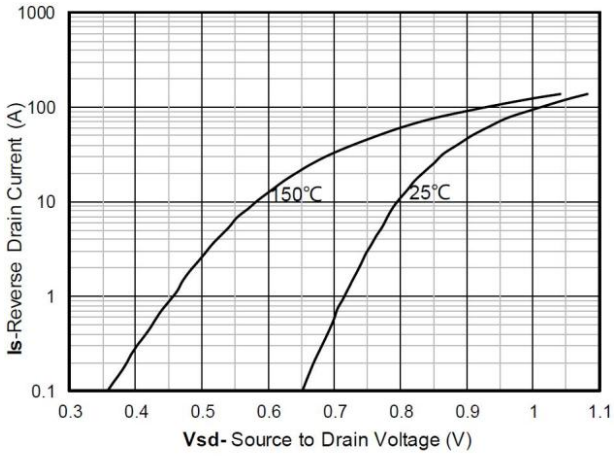


Normalized On-Resistance

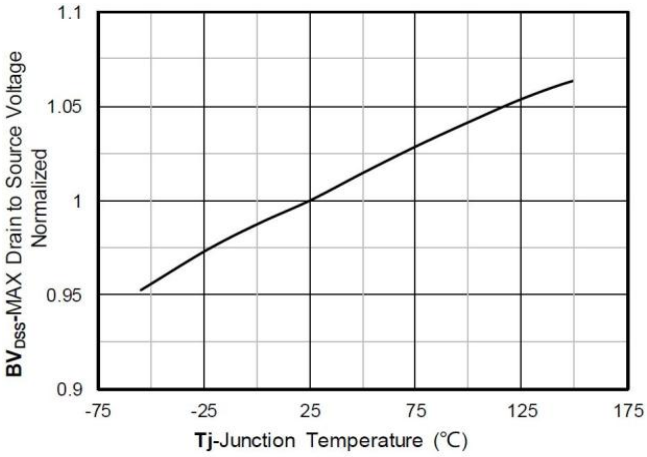
Typical Characteristics



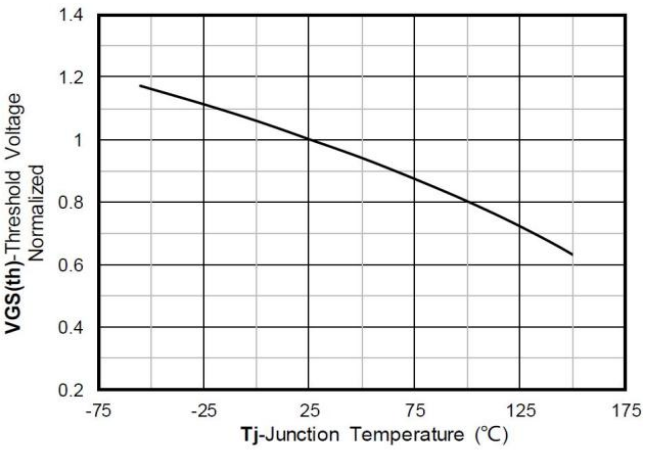
RDS(on) VS Drain Current



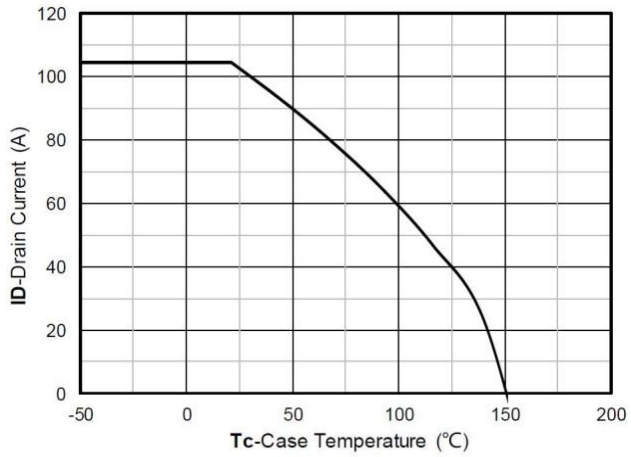
Forward characteristics of reverse diode



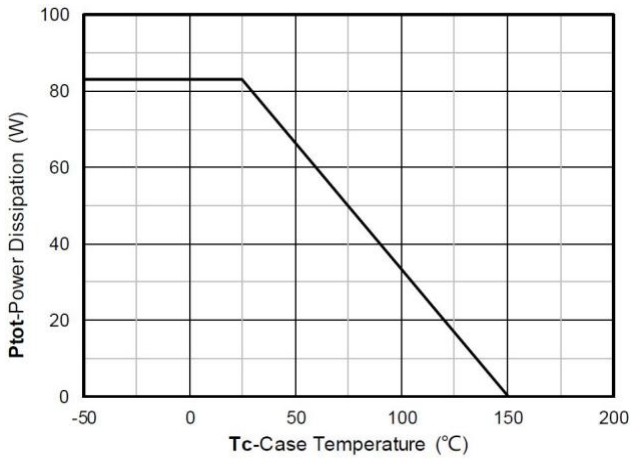
Normalized breakdown voltage



Normalized Threshold voltage

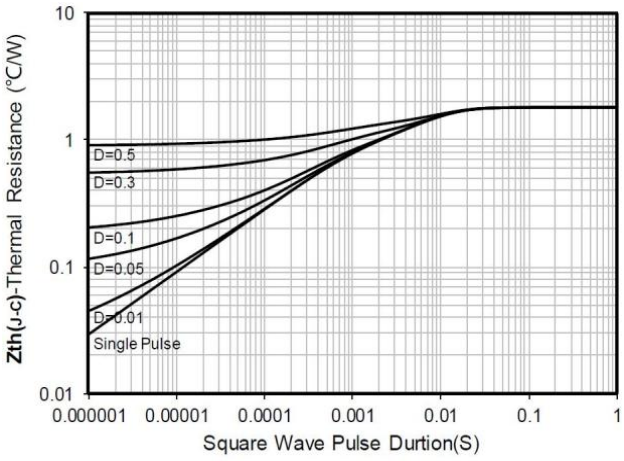


Current dissipation

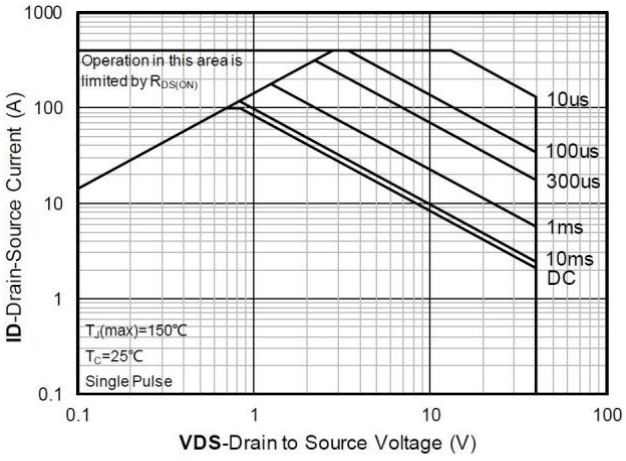


Power dissipation

Typical Characteristics

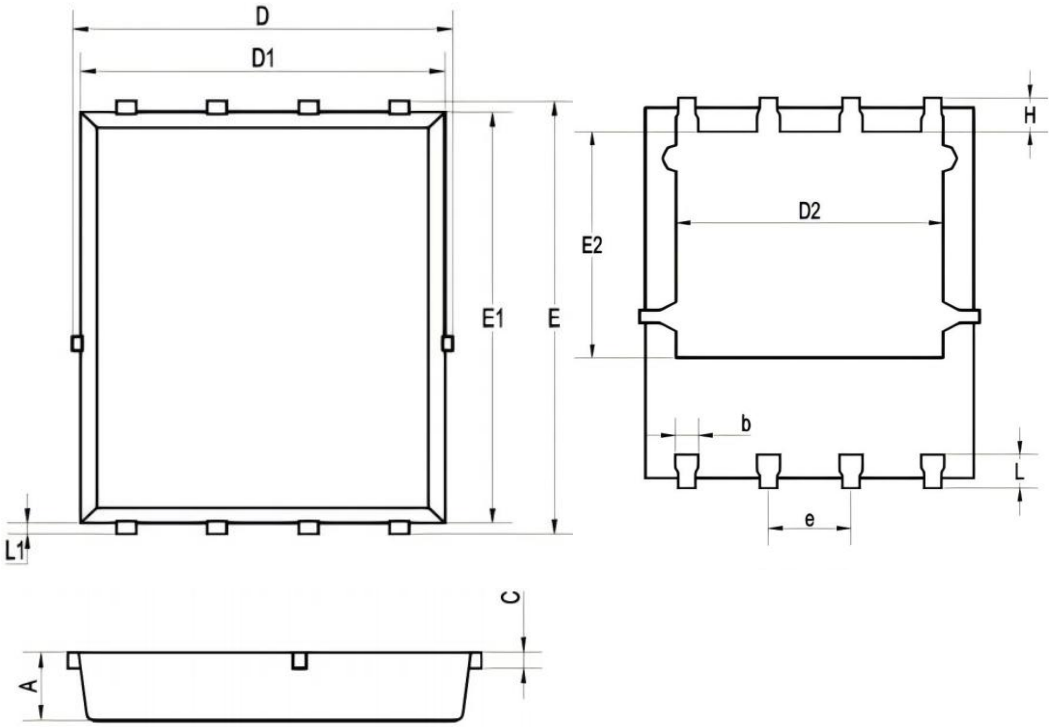


Maximum Transient Thermal Impedance



Safe Operation Area

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.120	0.035	0.044
b	0.330	0.510	0.013	0.020
C	0.110	0.340	0.004	0.013
D	4.700	5.260	0.185	0.207
D1	4.700	5.100	0.185	0.201
D2	3.560	4.500	0.140	0.177
E	5.750	6.250	0.226	0.246
E1	5.600	6.000	0.220	0.236
E2	3.180	3.660	0.125	0.144
e	1.170	1.370	0.046	0.054
L	0.350	0.710	0.014	0.028
L1	0.060	0.200	0.002	0.008
H	0.350	0.710	0.014	0.028