AT035SP030MPG

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	10mΩ@-10V	-35A
	14mΩ@-4.5V	

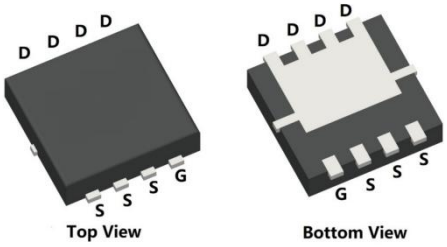
Feature

- Advanced Trench technology
- Excellent $R_{DS(ON)}$ and low gate charge
- Lead free

Application

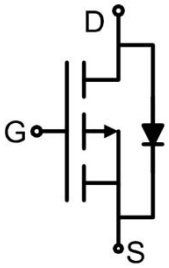
- Load switch
- PWM application
- Power management

Package

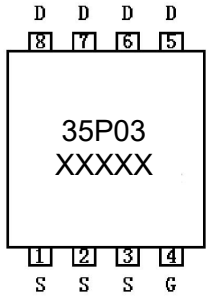


PDFN3*3-8L

Circuit diagram



Marking



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Absolute maximum ratings (T_C=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	I_D	-35	A
Continuous Drain Current (T_C =100℃)	I_D (100 ℃)	-22	A
Pulsed Drain Current[1)]	I_{DM}	-140	A
Single Pulse Avalanche Energy[2)]	E_{AS}	64	mJ
Power Dissipation	P_D	30	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	4.1	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=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	-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	-1.7	-2.5	V
Drain-source on-resistance[3)]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-12A		7.6	10	mΩ
		V_{GS} =-4.5V, I_D =-8A		10.7	14	
Dynamic characteristics[4)]						
Input Capacitance	C_{iss}	V_{DS} =-15V, V_{GS} =0V, f =1MHz		2252		pF
Output Capacitance	C_{oss}			306		
Reverse Transfer Capacitance	C_{rss}			222		
Total Gate Charge	Q_g	V_{DS} =-15V, V_{GS} =-10V I_D =-10A		41		nC
Gate-Source Charge	Q_{gs}			7		
Gate-Drain Charge	Q_{gd}			10		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-15V, V_{GS} =-10V I_D =-10A, R_G =3Ω		6		nS
Turn-on rise time	t_r			2		
Turn-off delay time	$t_{d(off)}$			90		
Turn-off fall time	t_f			52		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-35	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =-30A			-1.2	V
Reverse Recovery Time	T_{rr}	I_S =-10A, di/dt =-100A/μs		15		nS
Reverse Recovery Charge	Q_{rr}			6		nC

Notes:

1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2) EAS condition: Starting T_J=25℃, V_{DD}=-15V, V_G=-10V, R_G=25Ω, L=0.5mH, I_{AS}=-16A。
3) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.
4) Guaranteed by design, not subject to production.

Typical Characteristics

Figure 1: Output Characteristics

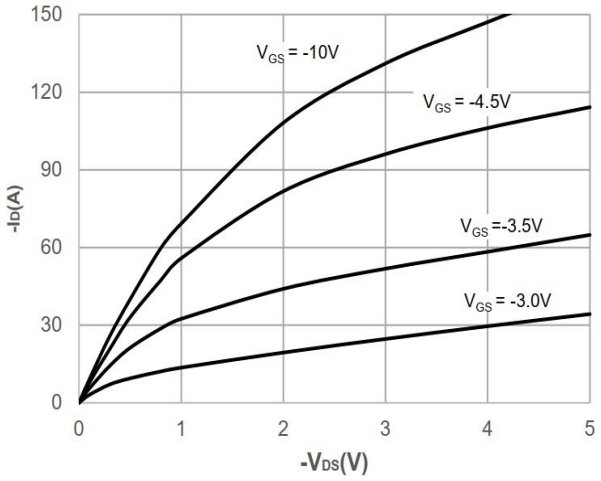


Figure 2: Typical Transfer Characteristics

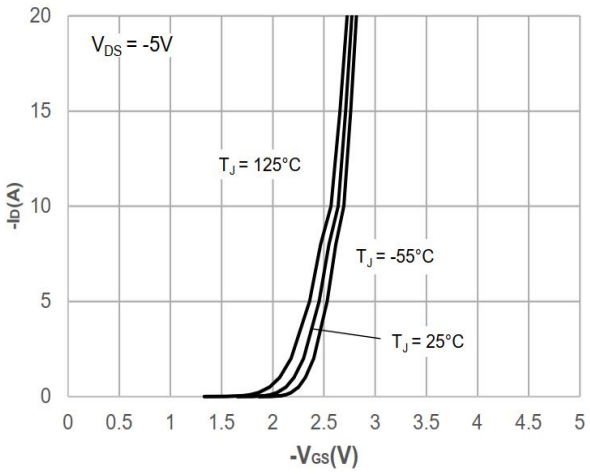


Figure 3: On-resistance vs. Drain Current

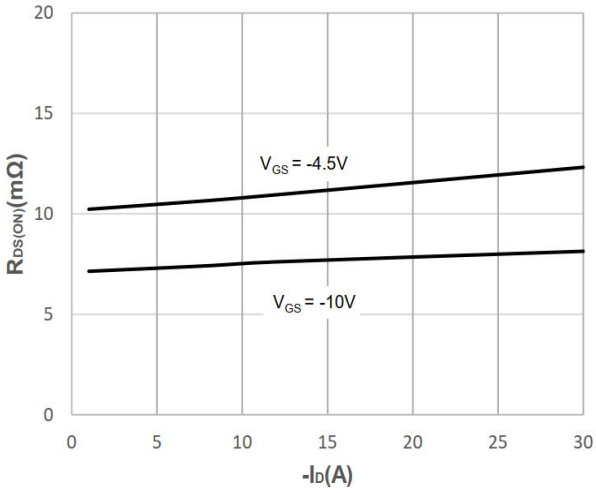


Figure 4: Body Diode Characteristics

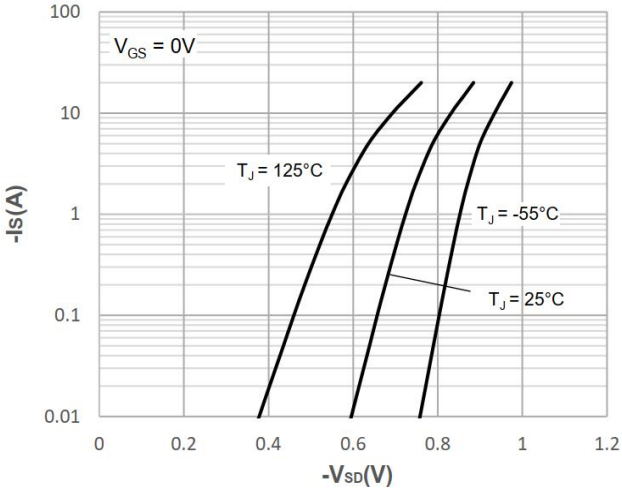


Figure 5: Gate Charge Characteristics

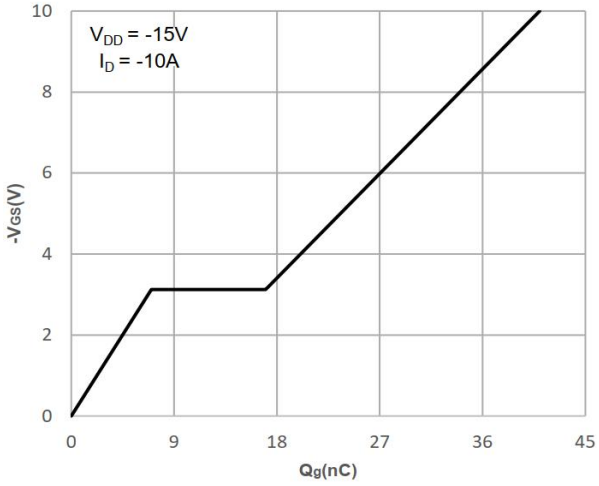
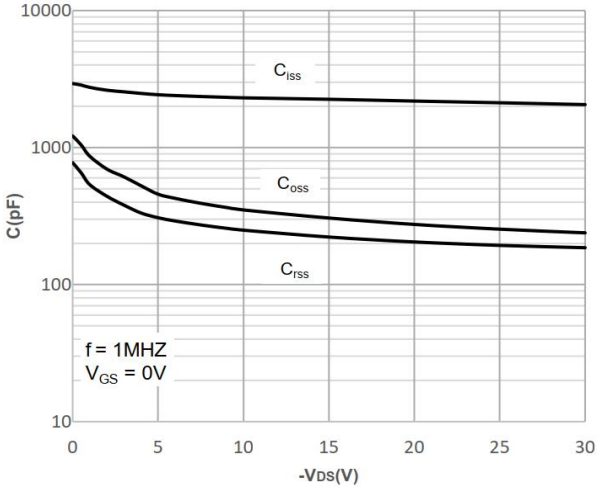


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

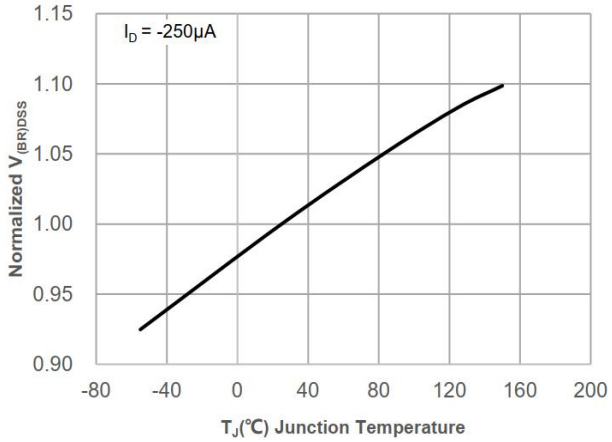


Figure 8: Normalized on Resistance vs. Junction Temperature

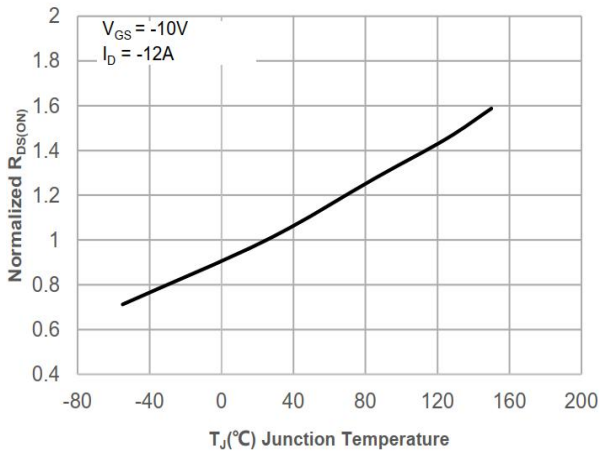


Figure 9: Maximum Safe Operating Area

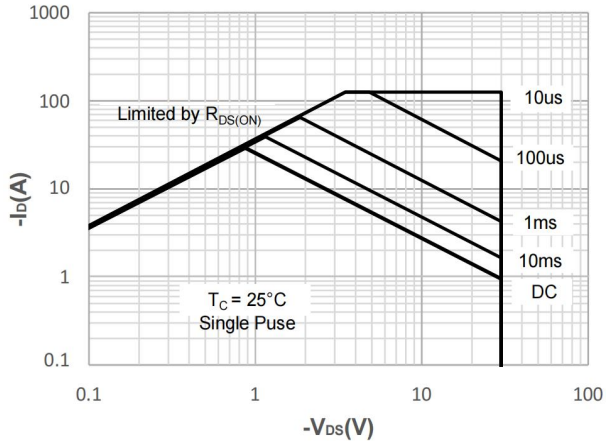


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

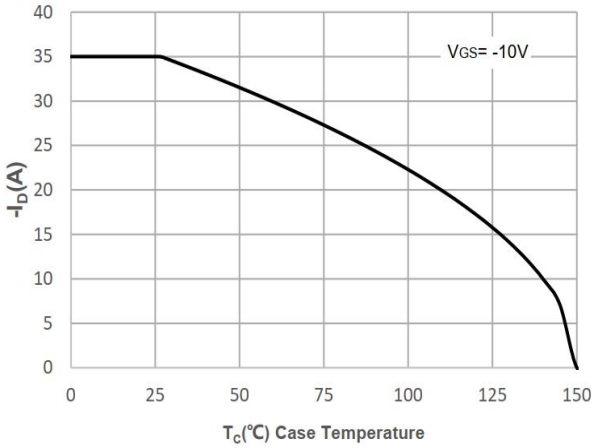


Figure 11: Normalized Maximum Transient Thermal Impedance

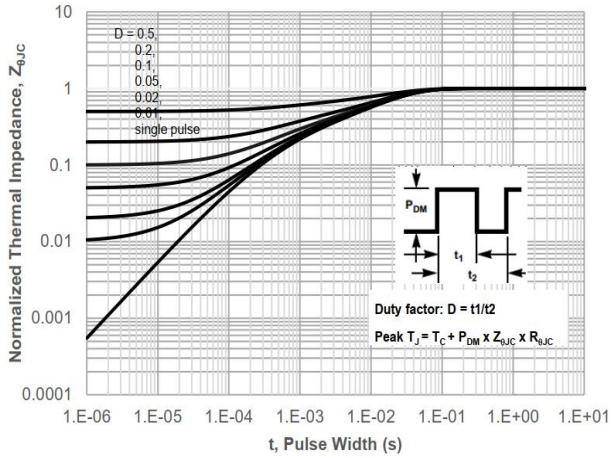
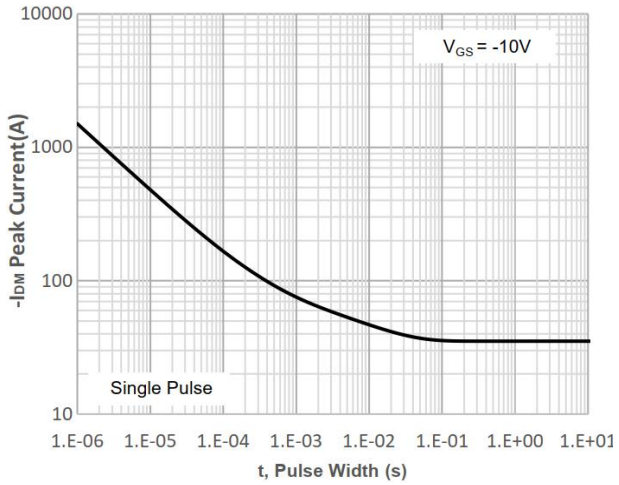
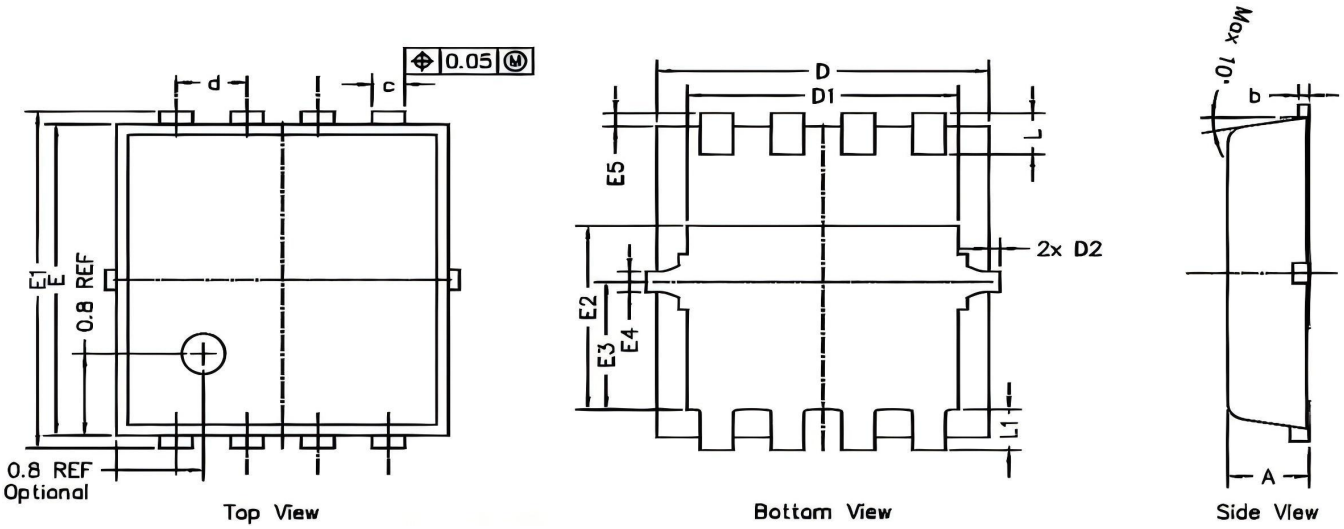


Figure 12: Peak Current Capacity



PDFN3*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	0.144	0.202	0.006	0.008
c	0.250	0.350	0.010	0.014
d	0.650 BSC		0.026 BSC	
D	2.950	3.150	0.116	0.124
D1	2.390	2.590	0.094	0.102
D2	0.000	0.125	0.000	0.005
E	2.950	3.150	0.116	0.124
E1	3.200	3.400	0.126	0.134
E2	1.700	1.900	0.067	0.075
E3	1.150	1.350	0.045	0.053
E4	1.150	0.250	0.045	0.010
E5	0.075	0.175	0.003	0.007
L	0.300	0.500	0.012	0.020
L1	0.300	0.500	0.012	0.020