AT042SP030MPG

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	9mΩ@-10V	-42A
	13mΩ@-4.5V	

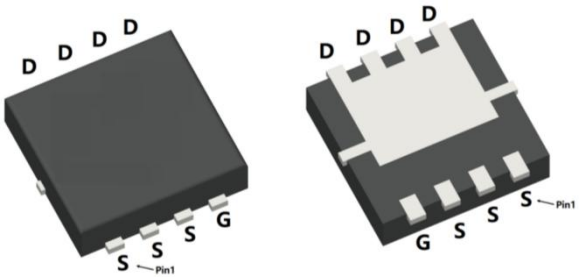
Feature

- Fast switching speed
- Low On-Resistance

Application

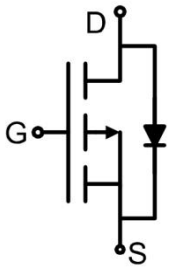
- DC-DC converters
- Power management

Package

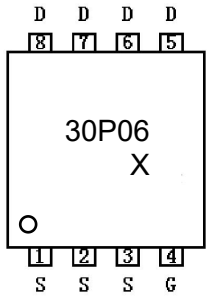


PDFN3*3-8L

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	-42	A
Continuous Drain Current (T_C =100℃)	I_D(100℃)	-28	A
Pulsed Drain Current Tested	I_{DM}	-168	A
Single Pulse Avalanche Energy[1)]	E_{AS}	125	mJ
Power Dissipation (T_C =25℃)	P_D	37	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	3.4	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature Range	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 °C, unless otherwise noted)

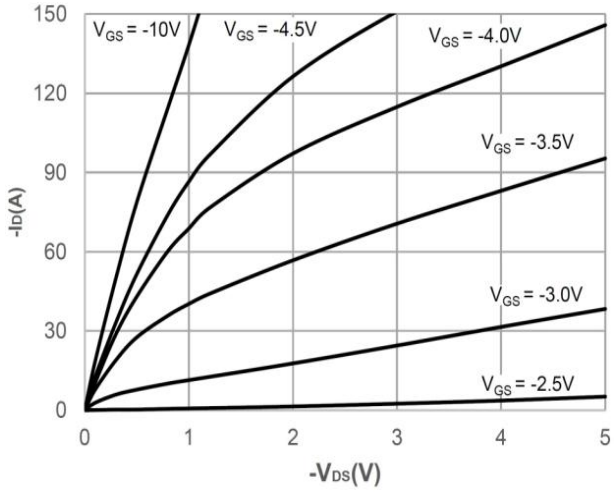
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =-250μA	-30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-24V, V_{GS} =0V, T_J =25℃			-1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.6	-2.2	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-15A		6	9	mΩ
		V_{GS} =-4.5V, I_D =-10A		9	13	
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =-15V, V_{GS} =0V, f =1MHz		3456		pF
Output Capacitance	C_{oss}			387		
Reverse Transfer Capacitance	C_{rss}			335		
Total Gate Charge	Q_g	V_{DS} =-15V, V_{GS} =-10V I_D =-20A		62		nC
Gate-Source Charge	Q_{gs}			12		
Gate-Drain Charge	Q_{gd}			14		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-15V, V_{GS} =-10V I_D =-20A, R_G =3Ω		15		nS
Turn-on rise time	t_r			61		
Turn-off delay time	$t_{d(off)}$			54		
Turn-off fall time	t_f			65		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-42	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =-1A, T_J =25℃			-1.2	V
Reverse Recovery Time	T_{rr}	I_S =-20A, di/dt =-100A/μs T_J =25℃		25		nS
Reverse Recovery Charge	Q_{rr}			12		nC

Notes:

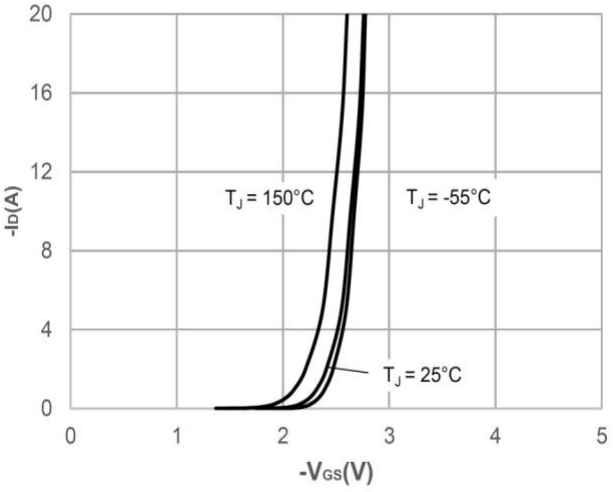
1) EAS test condition :V_{DD} =-15V, V_G =-10V, L =0.1mH, Rg =25Ω.

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

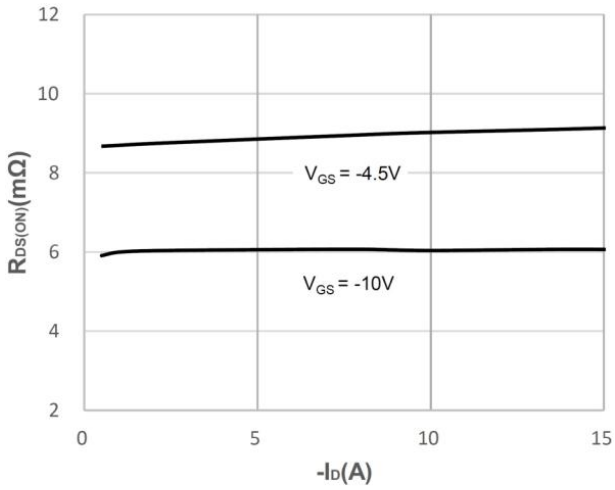
Typical Characteristics



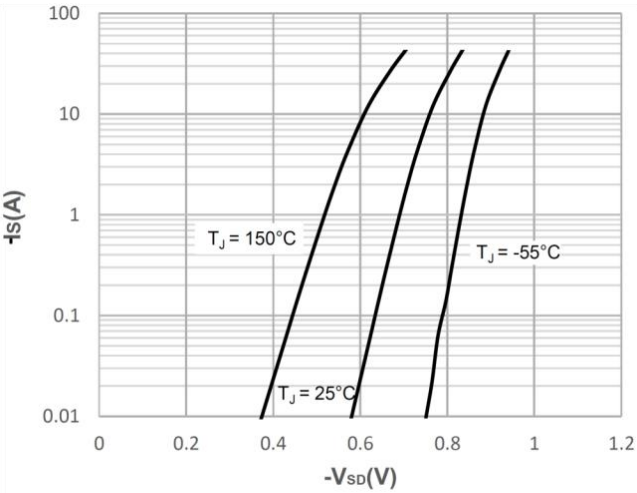
Output Characteristics



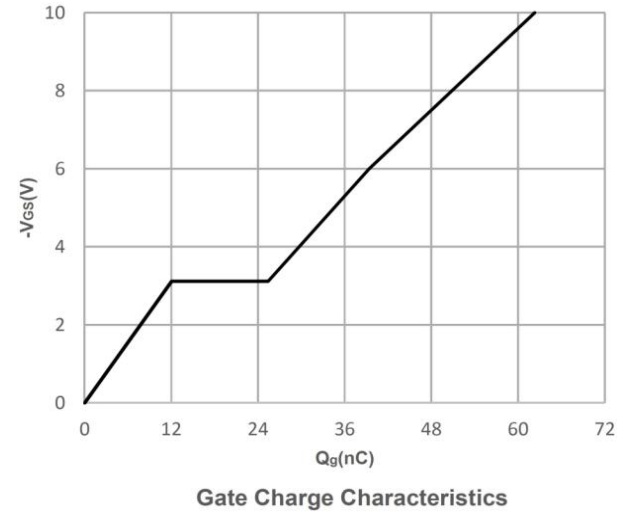
Typical Transfer Characteristics



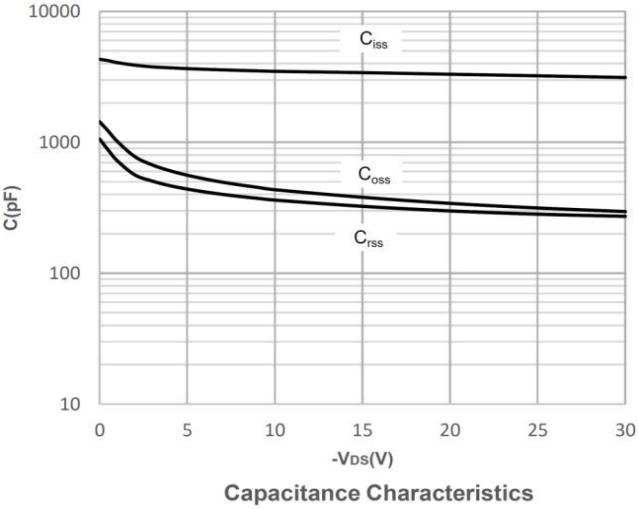
On-resistance vs. Drain Current



Body Diode Characteristics

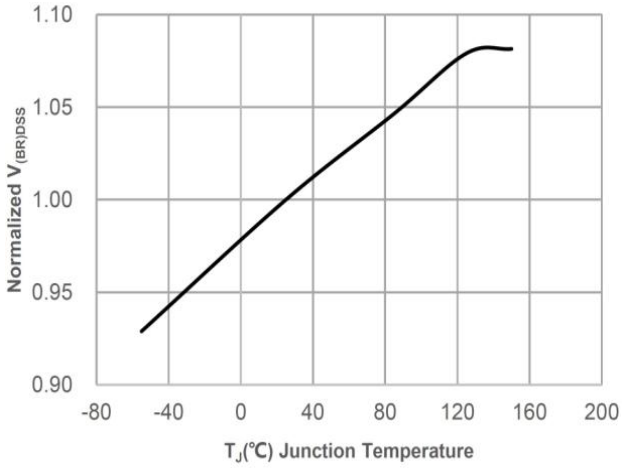


Gate Charge Characteristics

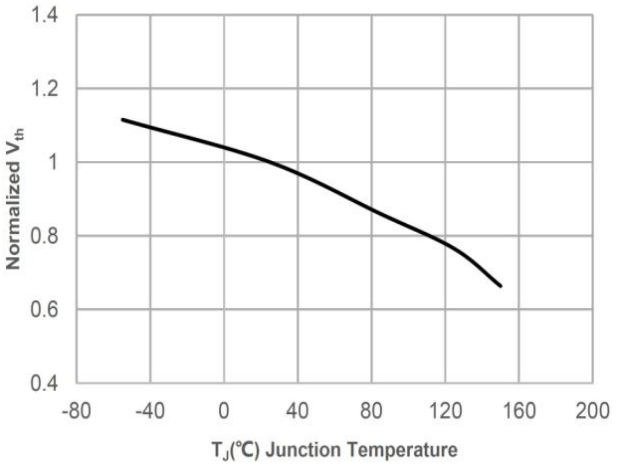


Capacitance Characteristics

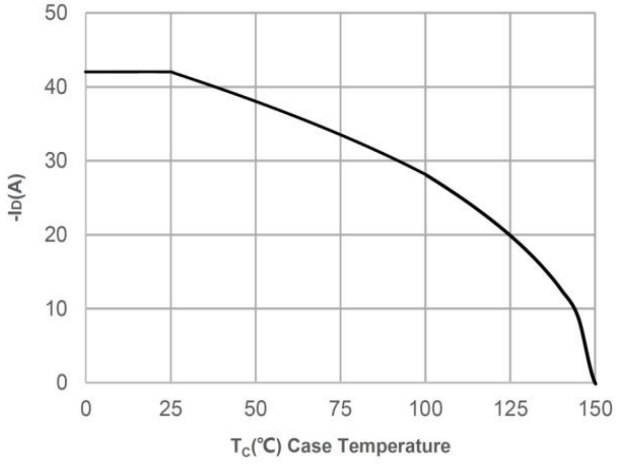
Typical Characteristics



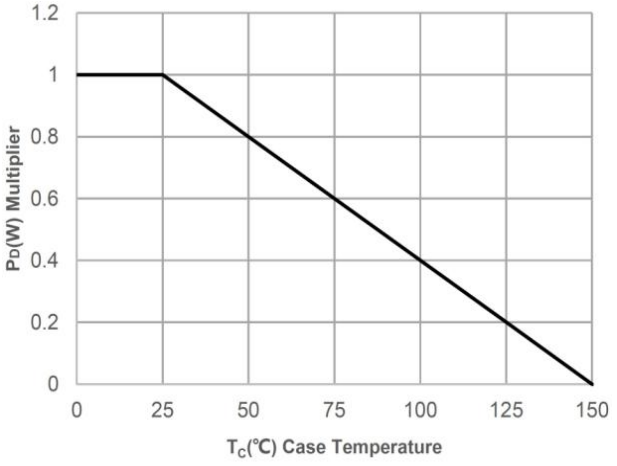
Normalized Breakdown voltage vs. Junction



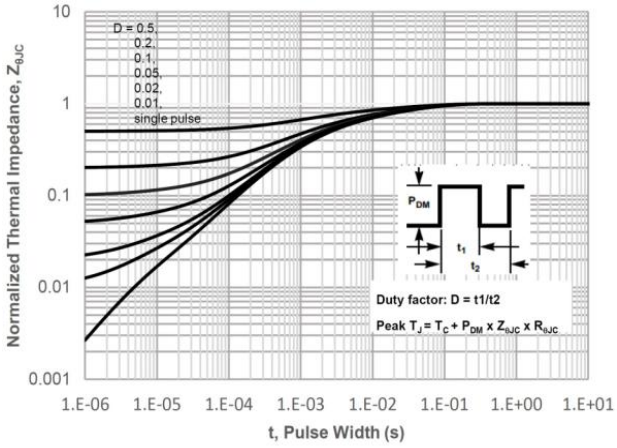
Normalized Threshold Voltage vs. Junction Temperature



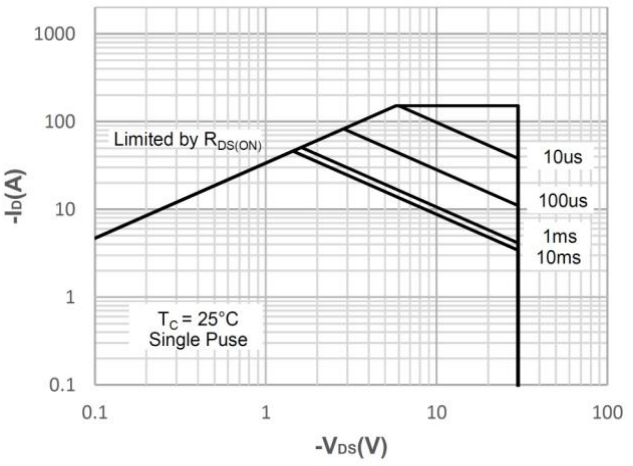
Current De-rating



Power De-rating

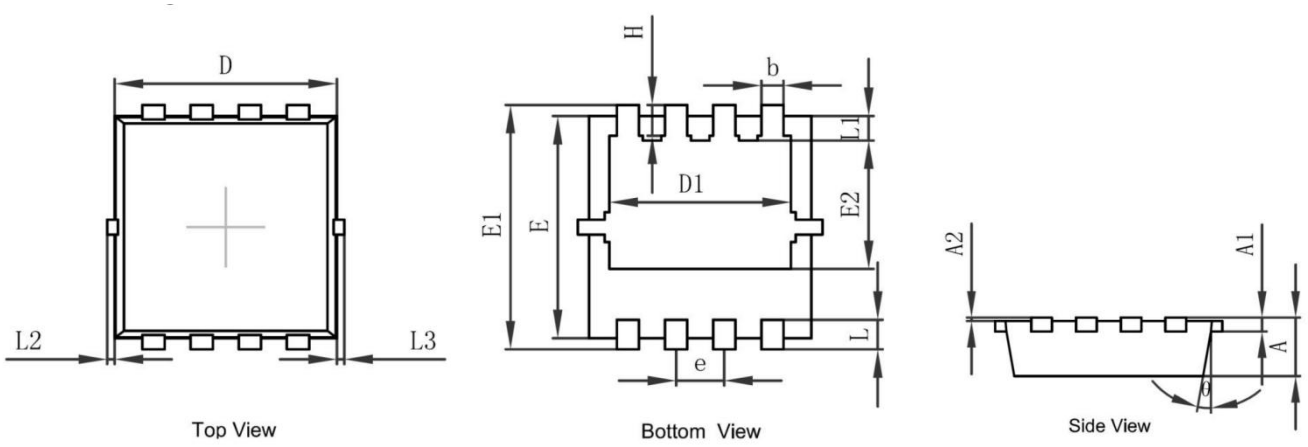


Normalized Maximum Transient Thermal Impedance



Maximum Safe Operating Area

PDFN3*3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0.000	0.050	0.000	0.002
D	2.900	3.200	0.114	0.126
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.100	3.450	0.122	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0.000	0.100	0.000	0.004
L3	0.000	0.100	0.000	0.004
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°