AT015SP020MNH

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	20mΩ@-4.5V	-15A
	26mΩ@-2.5V	

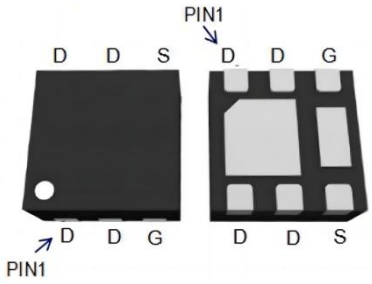
Feature

- Advanced trench technology
- Low gate charge
- Excellent $R_{DS(ON)}$

Application

- PWM applications
- Load switch
- Power management

Package



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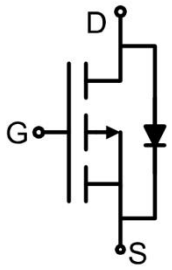
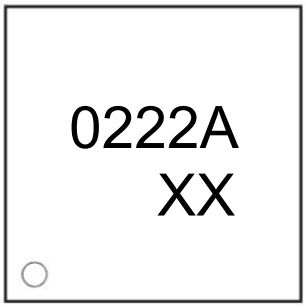
Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current (T_C=25℃)	I_D	-15	A
Continuous Drain Current (T_C=100℃)	I_D(100℃)	-9	A
Pulsed Drain Current[1]	I_{DM}	-60	A
Power Dissipation(T_c=25℃)	P_D	6	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	21	℃/ W
Junction Temperature	T_J	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	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-20V, V_{GS} =0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±12V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.4	-0.62	-1	V
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-5A		15	20	mΩ
		V_{GS} =-2.5V, I_D =-3A		20	26	
Dynamic characteristics[3]						
Input Capacitance	C_{iss}	V_{DS} =-10V, V_{GS} =0V, f =1MHz		1332		pF
Output Capacitance	C_{oss}			184		
Reverse Transfer Capacitance	C_{rss}			162		
Total Gate Charge	Q_g	V_{DS} =-10V, V_{GS} =-4.5V I_D =-6A		15		nC
Gate-Source Charge	Q_{gs}			2.2		
Gate-Drain Charge	Q_{gd}			4.4		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-10V, V_{GS} =-4.5V I_D =-12A, R_G =2.5Ω		10		nS
Turn-on rise time	t_r			31		
Turn-off delay time	$t_{d(off)}$			28		
Turn-off fall time	t_f			8		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-15	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=-5A			-1.2	V

Notes:

1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

3) Guaranteed by design, not subject to production.

Typical Characteristics

Figure 1: Output Characteristics

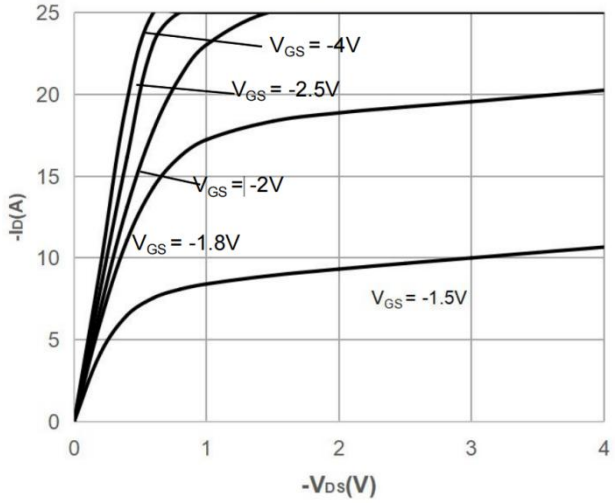


Figure 2: Typical Transfer Characteristics

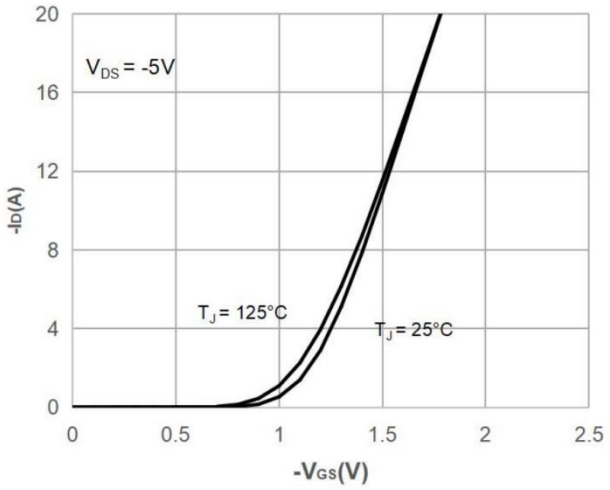


Figure 3: On-resistance vs. Drain Current

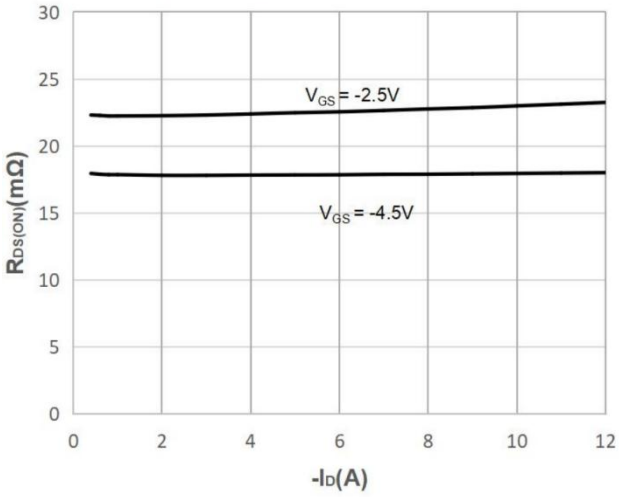


Figure 4: Body Diode Characteristics

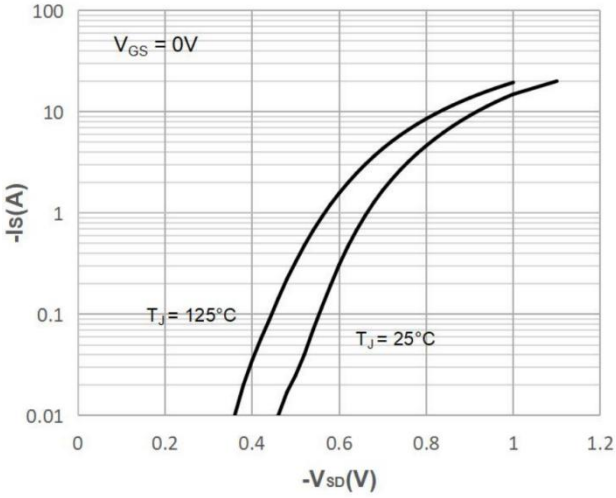


Figure 5: Gate Charge Characteristics

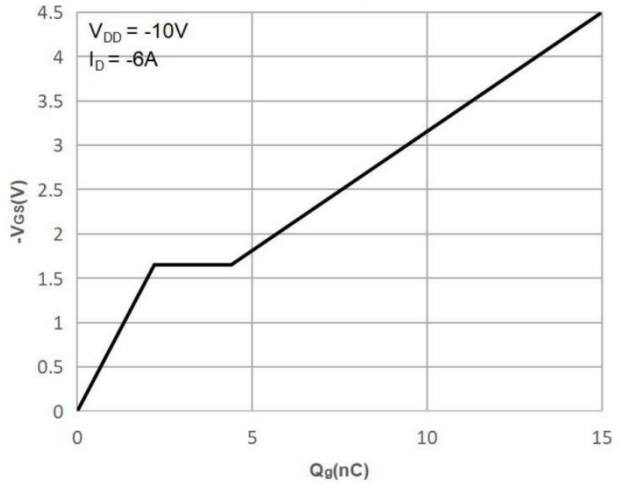
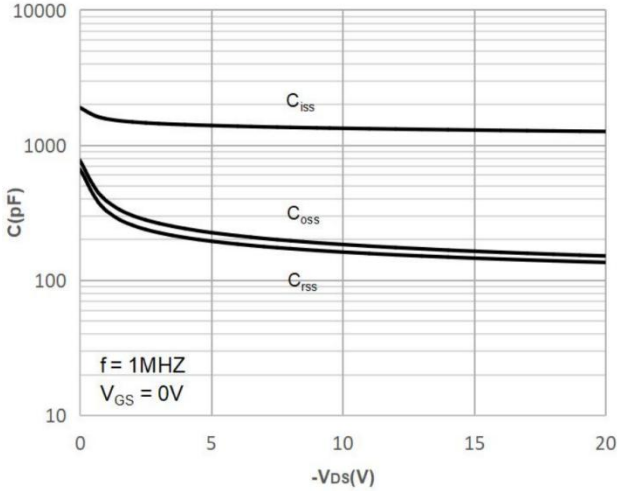


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

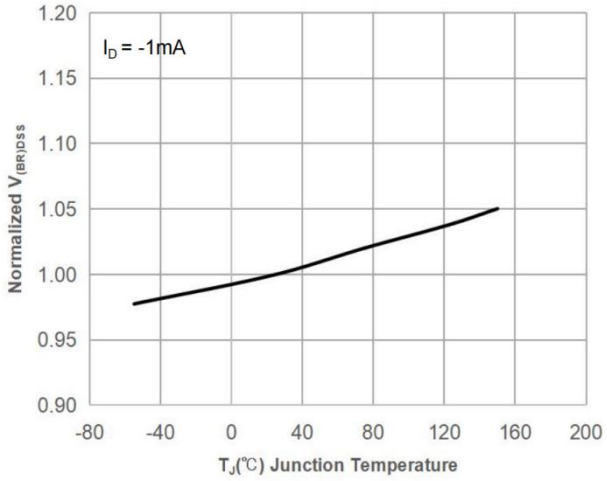


Figure 8: Normalized on Resistance vs. Junction Temperature

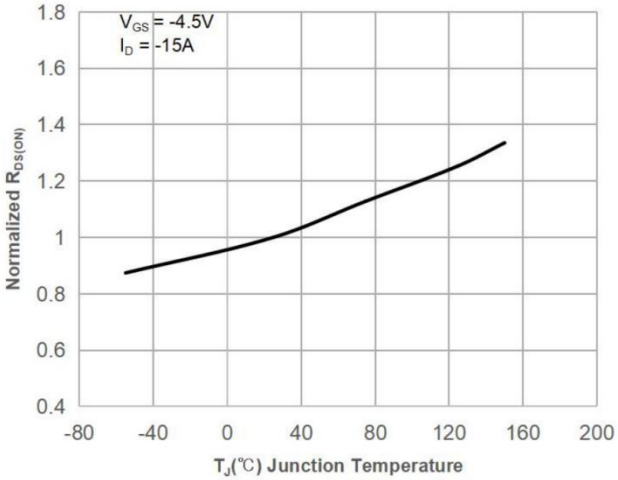


Figure 9: Maximum Safe Operating Area

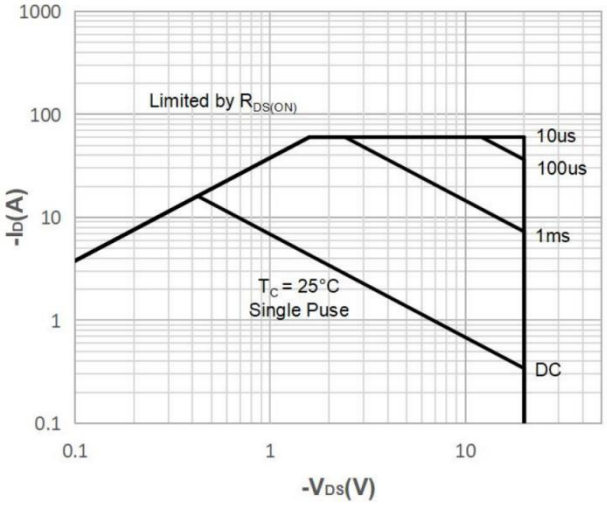


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

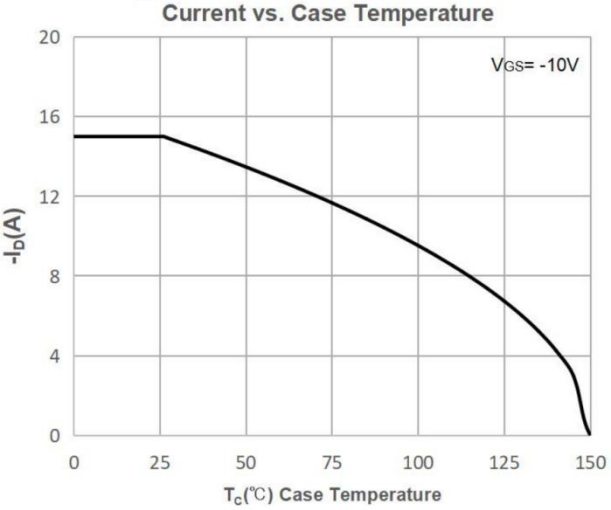


Figure 11: Normalized Maximum Transient Thermal Impedance

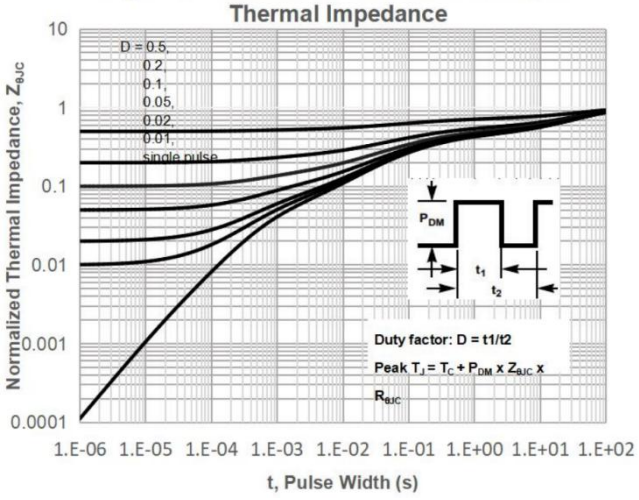
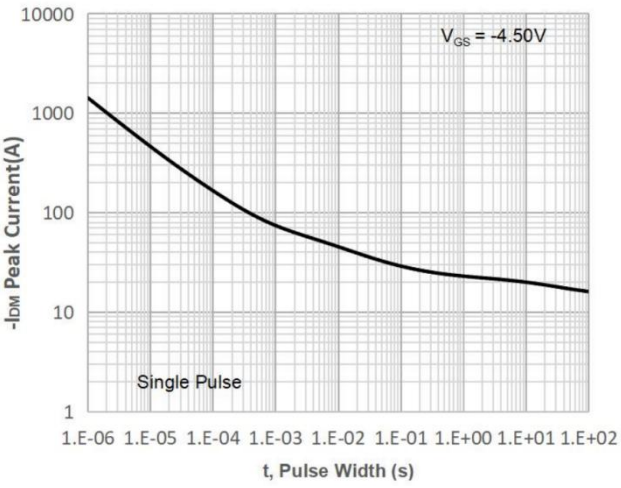
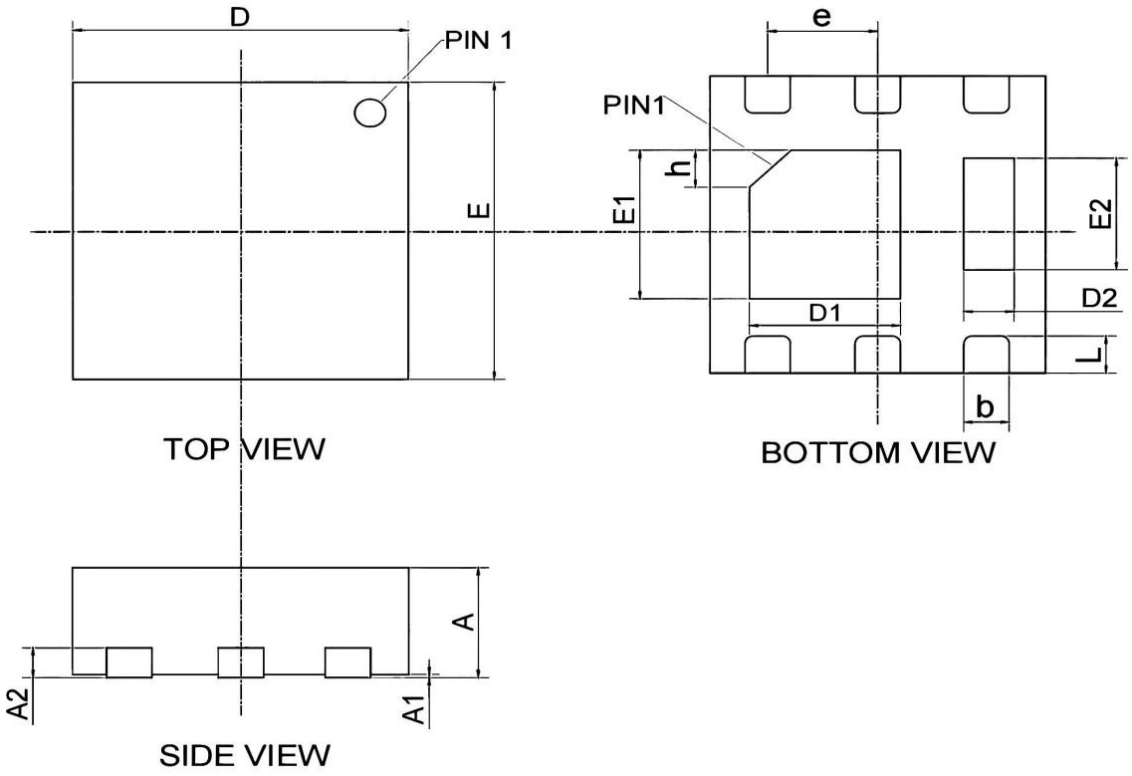


Figure 12: Peak Current Capacity



DFN2*2-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.180	0.250	0.007	0.010
b	0.200	0.340	0.008	0.013
D	1.950	2.050	0.077	0.081
E	1.950	2.050	0.077	0.081
D1	0.800	1.000	0.031	0.039
E1	0.900	1.100	0.035	0.043
D2	0.200	0.400	0.008	0.016
E2	0.650	0.850	0.026	0.033
L	0.200	0.350	0.008	0.014
h	0.200	0.300	0.008	0.012
e	0.650 BSC.		0.026 BSC.	