AT012SN030MNH

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	12.5mΩ@10V	12A
	16mΩ@4.5V	

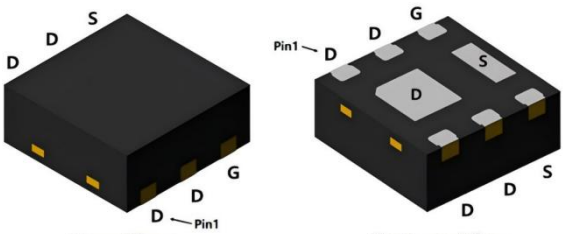
Feature

- Low On-resistance
- Low input capacitance

Application

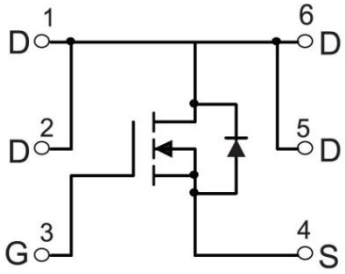
- Power management functions
- DC-DC Converters

Package

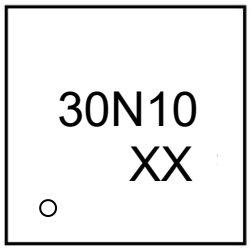


DFN2*2-6L

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	I_D	12	A
Continuous Drain Current (T_C=100℃)	I_D(100℃)	8	A
Pulsed Drain Current	I_{DM}	48	A
Power Dissipation	P_D	2.5	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	50	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

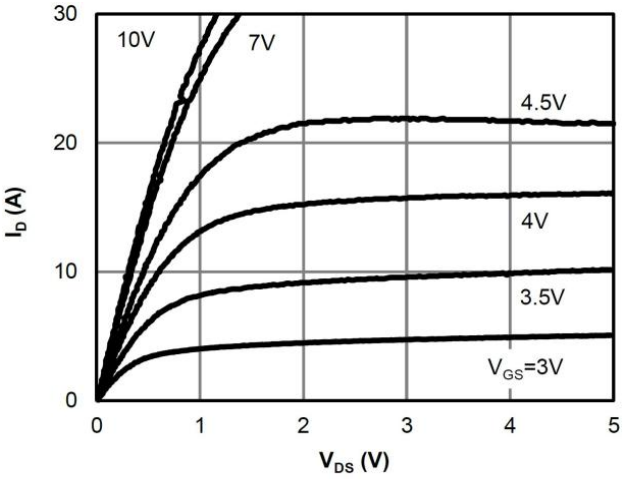
Electrical characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =250μA	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 =8A		10	12.5	mΩ
		V_{GS} =4.5V, I_D =4A		12	16	
Dynamic characteristics[1)]						
Input Capacitance	C_{iss}	V_{DS} =15V, V_{GS} =0V, f =1MHz		940		pF
Output Capacitance	C_{oss}			131		
Reverse Transfer Capacitance	C_{rss}			109		
Total Gate Charge	Q_g	V_{DS} =15V, V_{GS} =10V, I_D =8A		18		nC
Gate-Source Charge	Q_{gs}			3.6		
Gate-Drain Charge	Q_{gd}			3.4		
Turn-on delay time	$t_{d(on)}$	V_{DS} =15V, V_{GS} =10V, I_D =8A R_G =1.5Ω		4.2		nS
Turn-on rise time	t_r			8.2		
Turn-off delay time	$t_{d(off)}$			31		
Turn-off fall time	t_f			4		
Source-Drain Diode characteristics						
Diode forward current	I_S				12	A
Diode forward voltage	V_{SD}	V_{GS} =0V, I_S =1A, T_J =25℃			1.2	V

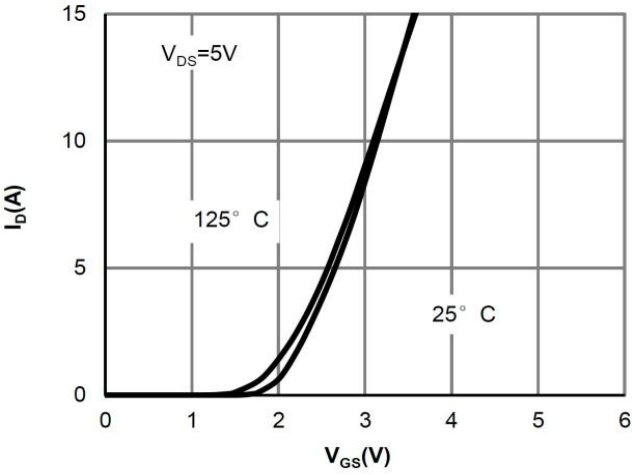
Notes:

1) Guaranteed by design, not subject to production.

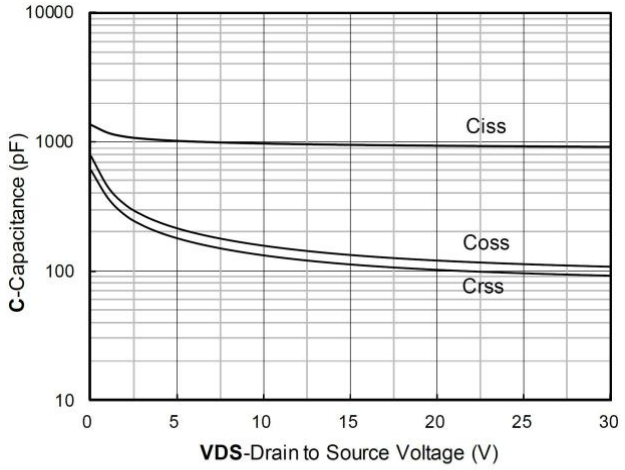
Typical Characteristics



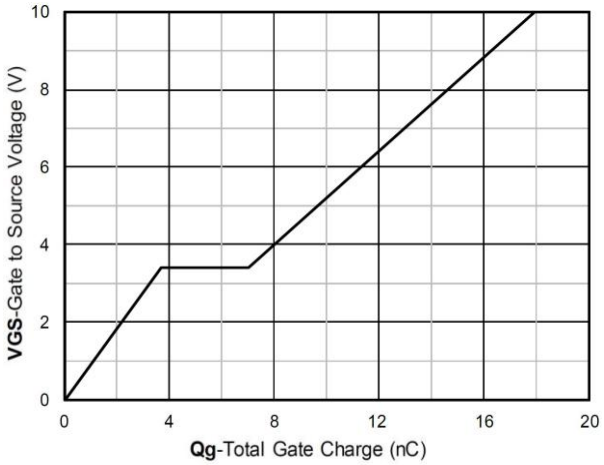
Output Characteristics



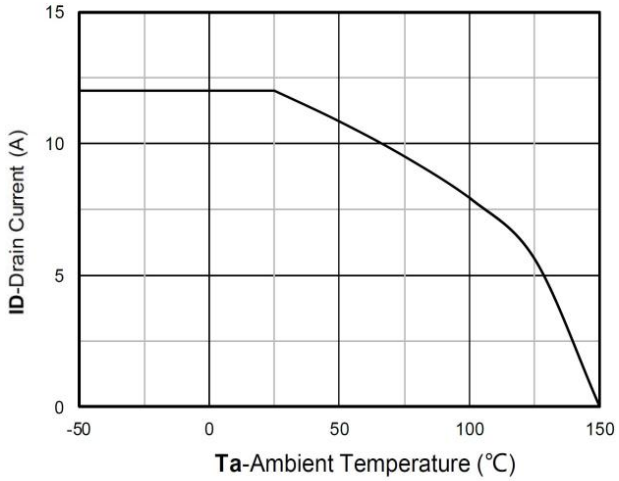
Transfer Characteristics



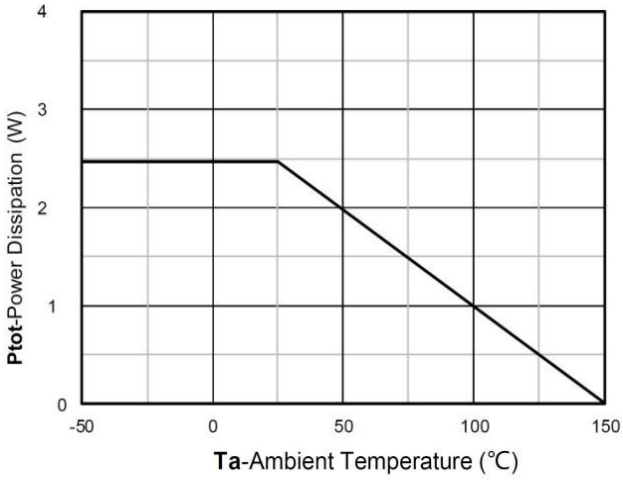
Capacitance Characteristics



Gate Charge

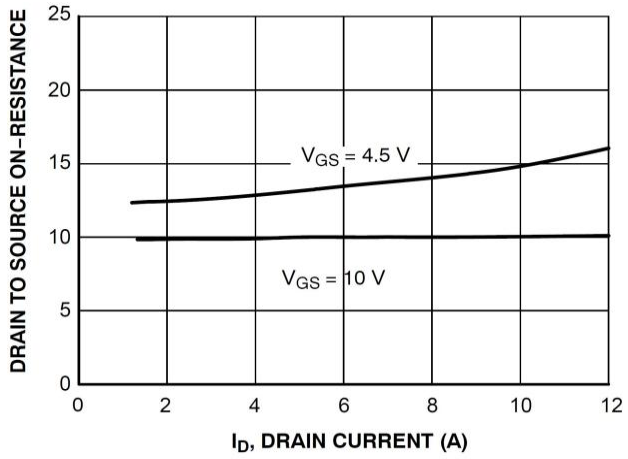


Current dissipation

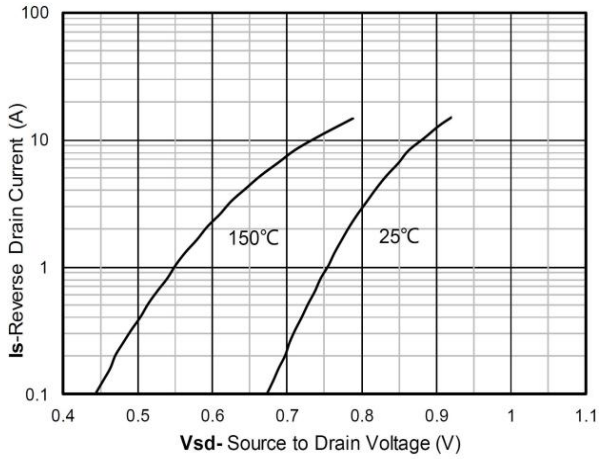


Power dissipation

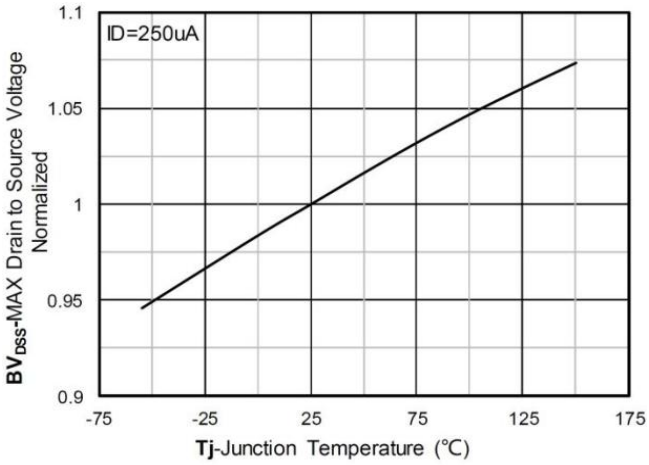
Typical Characteristics



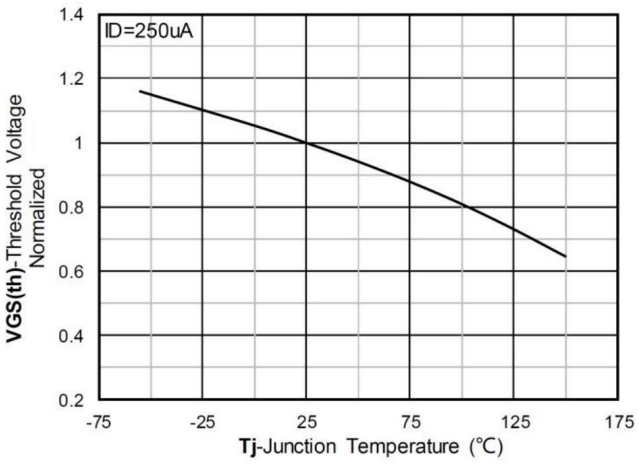
RDS(on) VS Drain Current



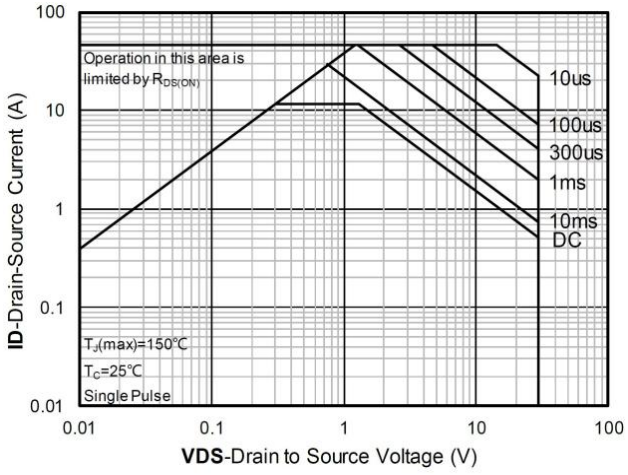
Forward characteristics of reverse diode



Normalized breakdown voltage

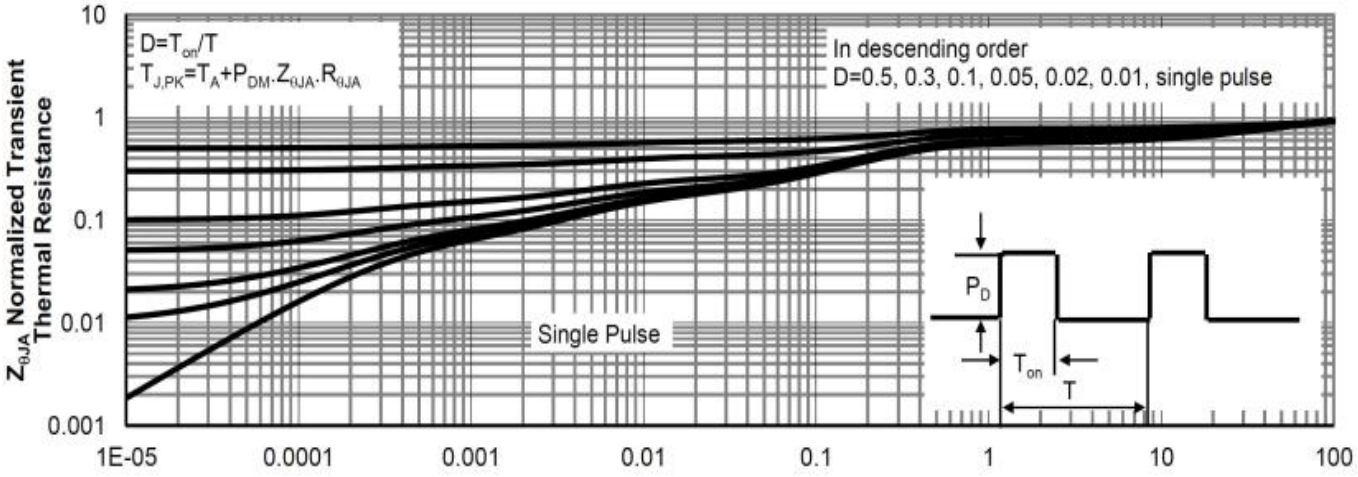


Normalized Threshold voltage



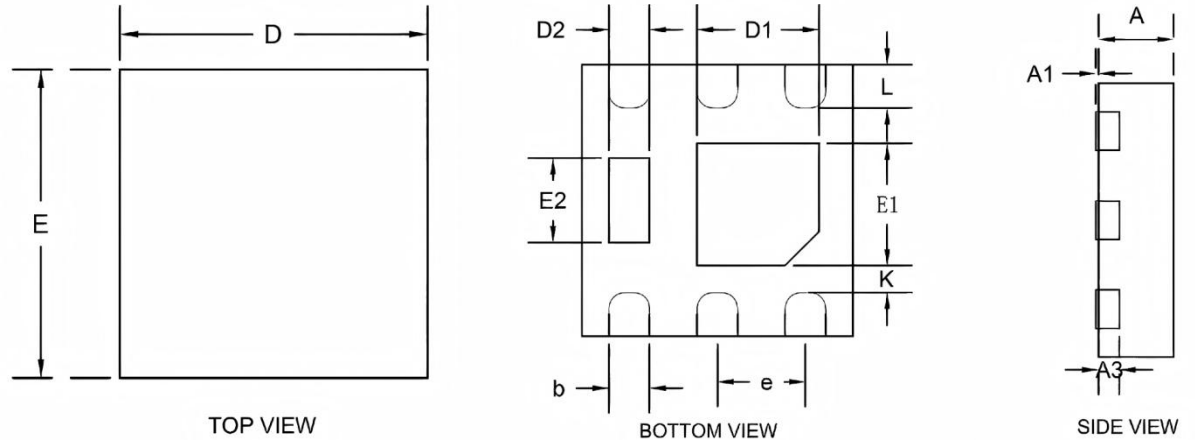
Safe Operation Area

Typical Characteristics



Normalized Maximum Transient Thermal Impedance

DFN2*2-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.650	0.018	0.026
A1	0.000	0.050	0.000	0.002
A3	0.152 BSC.		0.006 BSC.	
b	0.250	0.350	0.010	0.014
D	1.900	2.100	0.075	0.083
D1	0.800	1.050	0.031	0.041
D2	0.150	0.450	0.006	0.018
E	1.950	2.050	0.077	0.081
E1	0.700	1.250	0.028	0.049
E2	0.550	0.750	0.022	0.030
e	0.650 BSC.		0.026 BSC.	
L	0.200	0.400	0.008	0.016
K	0.200 BSC.		0.008 BSC.	