AS05N15AS-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
150V	65mΩ@10V	5.1A

Feature

- High Speed Power Switching, logic level
- High Density Cell Design For Ultra Low On-Resistance
- Enhanced Body diode dv/dt capability
- Enhanced Avalanche Ruggedness
- Suffix “-Q1” for AEC-Q101

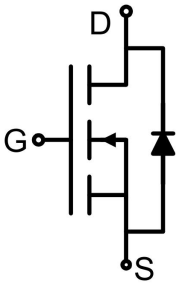
Application

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- Power Tools
- UPS
- Motor Control

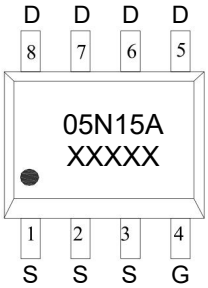
Package

SOP-8

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	5.1	A
Pulsed Drain Current	I_{DM}	20	A
Power Dissipation	P_D	3	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	41.7	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	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	150			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =150V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.5	3.3	4.5	V
Drain-source on-resistance[1)]	$R_{DS(on)}$	V_{GS} =10V, I_D =5.1A		55	65	mΩ
Forward transconductance[1)]	g_{FS}	V_{DS} =5V, I_D =5.1A		12.5		S
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =75V,V_{GS} =0V,f =1MHz		550		pF
Output Capacitance	C_{oss}			62		
Reverse Transfer Capacitance	C_{rss}			2.5		
Total Gate Charge	Q_g	V_{DS} =75V,V_{GS} =10V,I_D =5.1A		8.5		nC
Gate-Source Charge	Q_{gs}			2.8		
Gate-Drain Charge	Q_{gd}			1.9		
Turn-on delay time	$t_{d(on)}$	V_{DD}=75V,V_{GS}=10V, I_D =5.1A,R_{GEN}=3Ω		7.5		nS
Turn-on rise time	t_r			1.4		
Turn-off delay time	$t_{d(off)}$			12.5		
Turn-off fall time	t_f			2.5		
Source-Drain Diode characteristics						
Diode Forward Current[1)]	I_S				5.1	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=5.1A			1.2	V
Reverse Recovery Time	t_{rr}	TJ = 25°C, I_F = I_S di/dt = 100A/μs [1)]		58		nS
Reverse Recovery Charge	Q_{rr}			69		nC

Notes:

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

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

Typical Characteristics

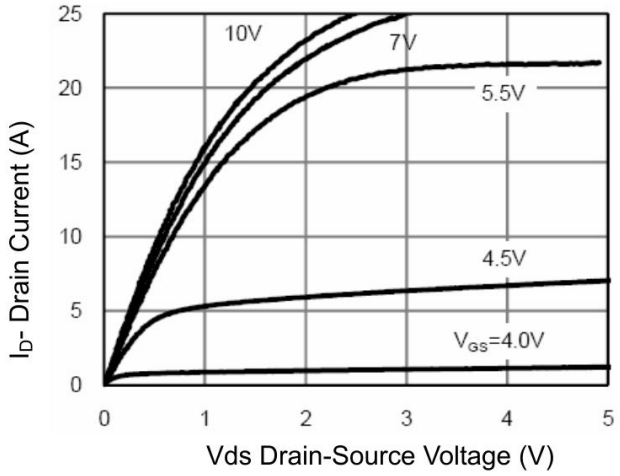


Figure 1 Output Characteristics

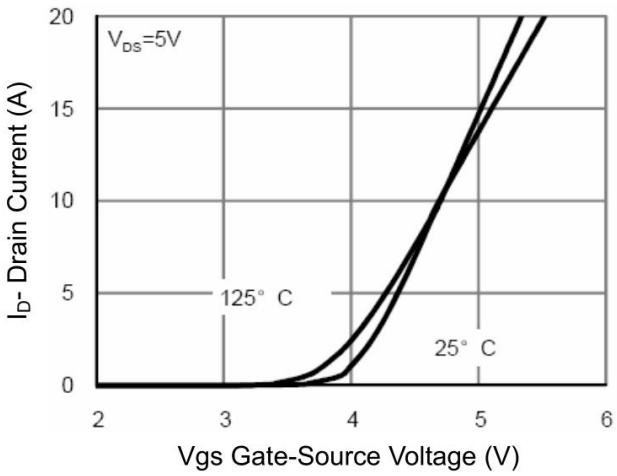


Figure 2 Transfer Characteristics

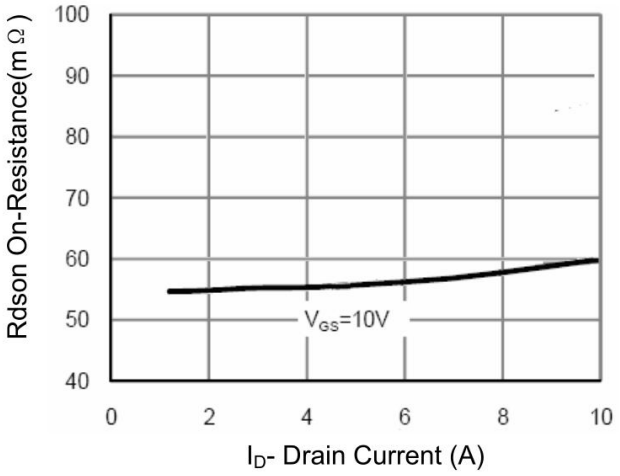


Figure 3 Rdson- Drain Current

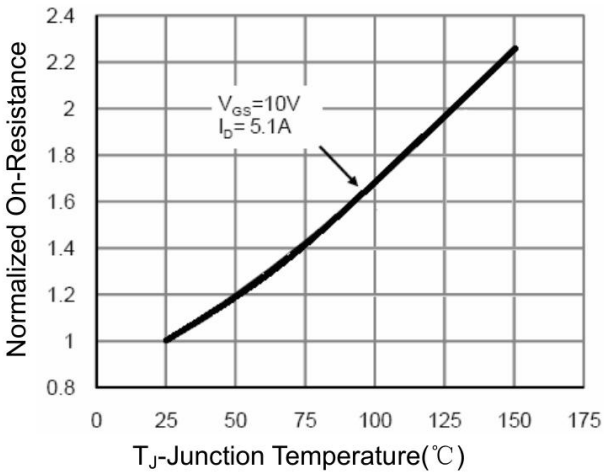


Figure 4 Rdson-JunctionTemperature

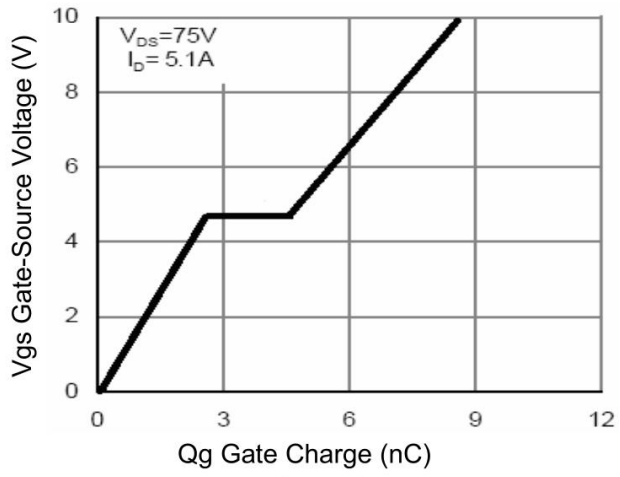


Figure 5 Gate Charge

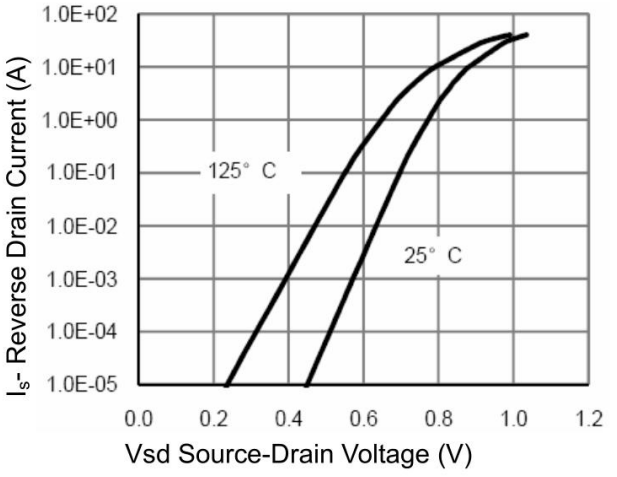


Figure 6 Source- Drain Diode Forward

Typical Characteristics

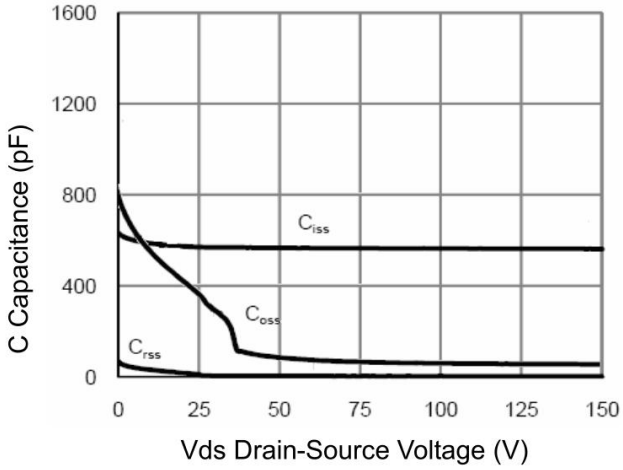


Figure 7 Capacitance vs Vds

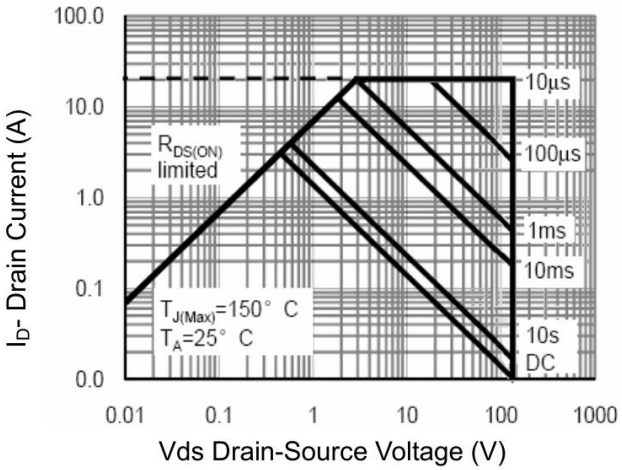


Figure 8 Safe Operation Area

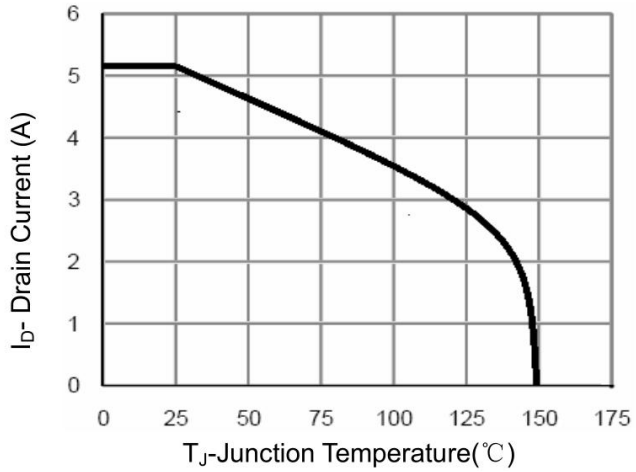


Figure 9 Current De-rating

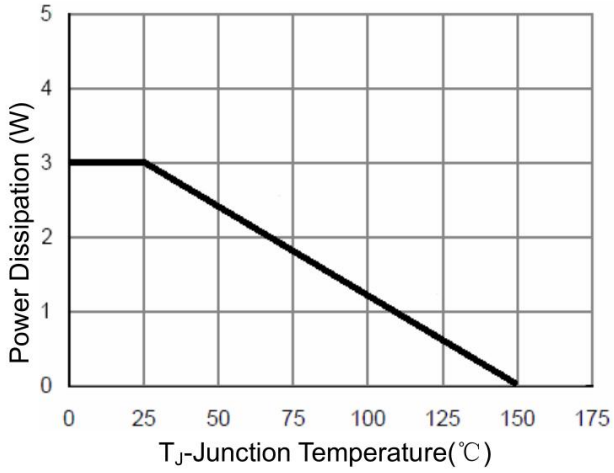


Figure 10 Power De-rating

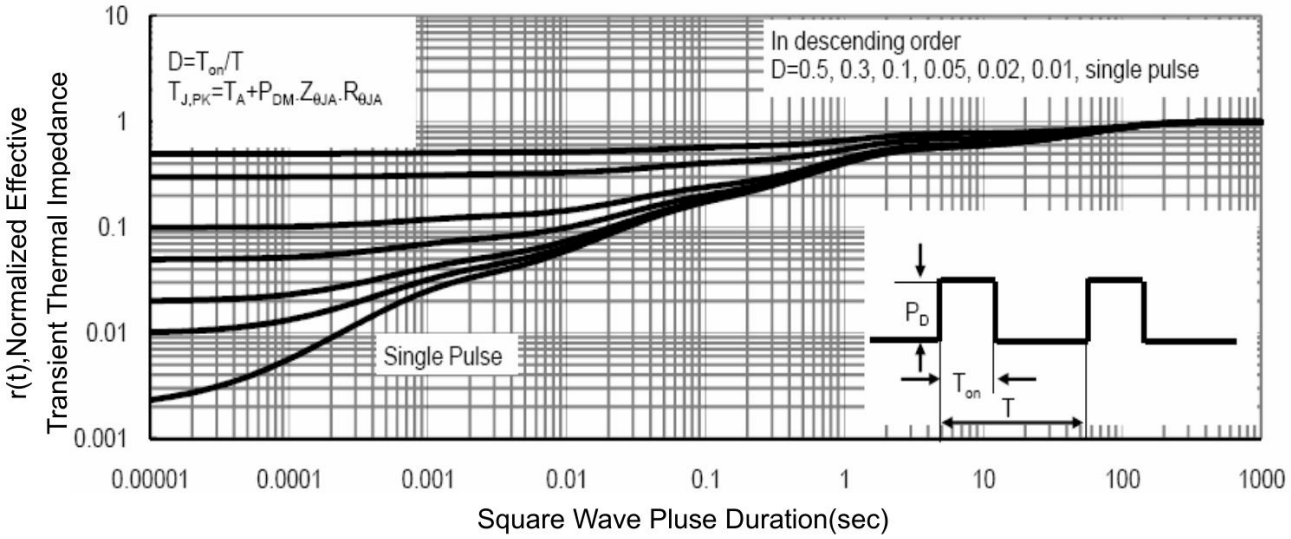
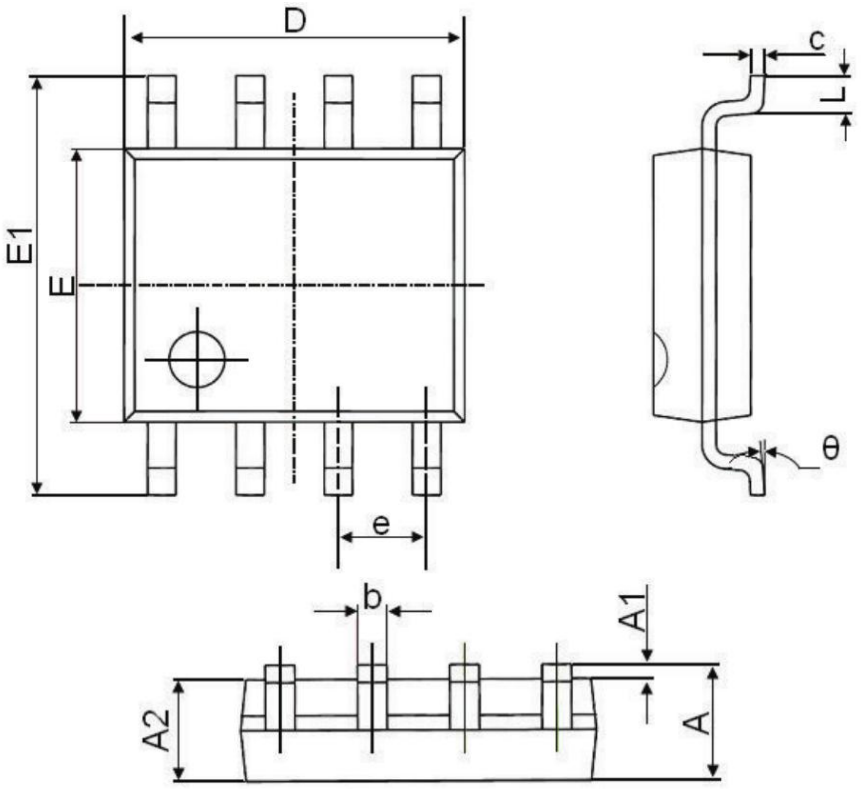


Figure 11 Normalized Maximum Transient Thermal Impedance

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°