AP0P1SN240MQSA-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
240V	15Ω@10V	0.11A
	20Ω@5V	

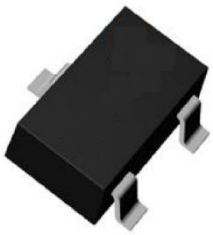
Feature

- Low input capacitance
- High V_{DSS} rating for power application
- Low input / output leakage
- Suffix “-Q1” for AEC-Q101

Application

- Motor control
- DC-DC converters
- Power management functions

Package



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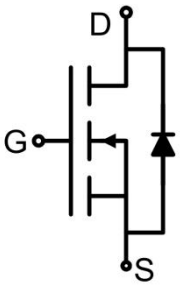
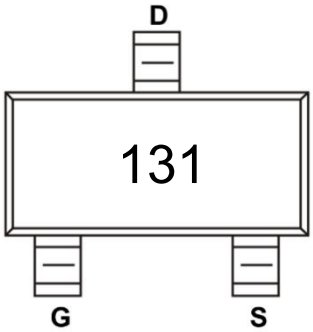
Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	240	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	0.11	A
Continuous Drain Current (T_A=70℃)	I_D(70℃)	0.09	A
Pulsed Drain Current (t_p=10μs)	I_{DM}	0.8	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient [1]	$R_{\theta JA}$	310	℃/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	240			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =240V,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	1	1.6	2	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =0.1A		13	15	Ω
		V_{GS} =5V, I_D =0.1A		15	20	
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		50		pF
Output Capacitance	C_{oss}			19		
Reverse Transfer Capacitance	C_{rss}			8		
Gate Charge	Q_g	V_{DD} =192V,V_{GS} =10V,I_D=0.2A		5.6		nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.9		
Source-Drain Diode characteristics						
Diode Forward current	I_S				0.11	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_{SD}=0.1A			1.5	V

Notes:

1) Surface−mounted on 1 inch² FR-4 board with 2OZ copper.

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

Typical Characteristics

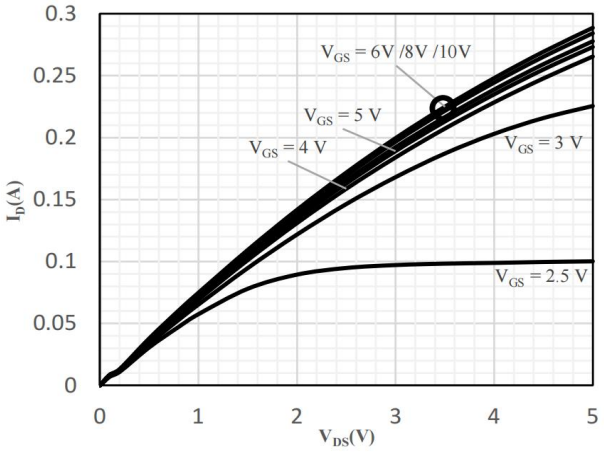


Fig 1 Typical Output Characteristics

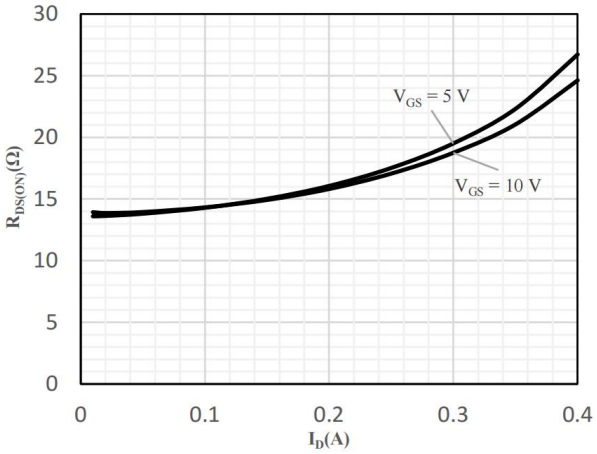


Fig 2 On-Resistance vs. Drain Current

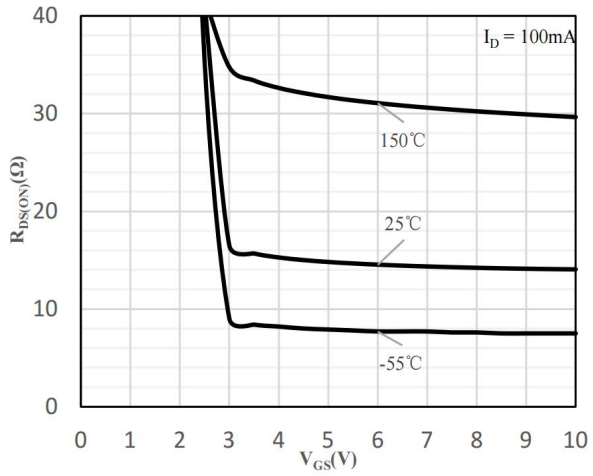


Fig 3 On-Resistance vs. Gate-Source Voltage

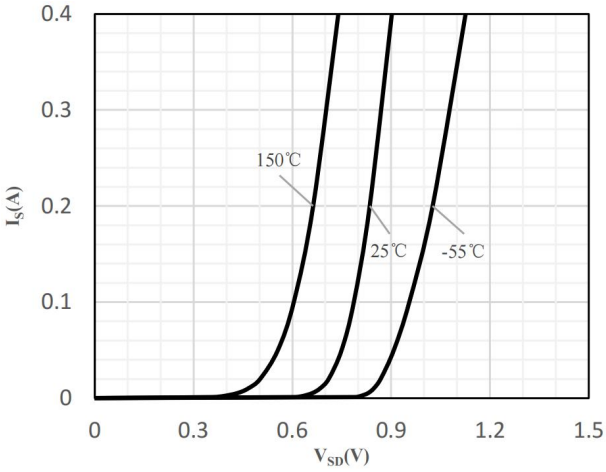


Fig 4 Body-Diode Characteristics

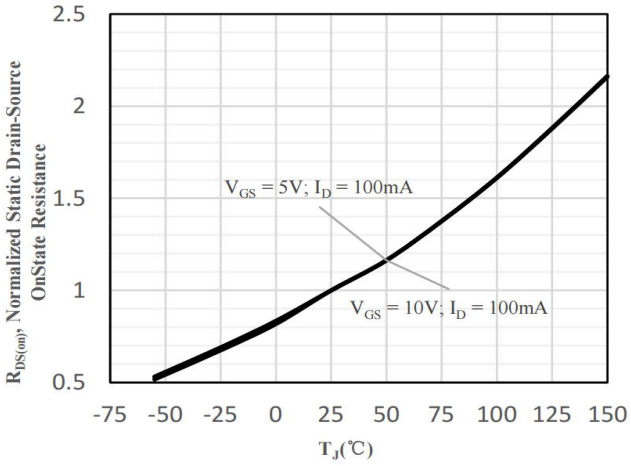


Fig 5 Normalized On-Resistance vs. Junction Temperature

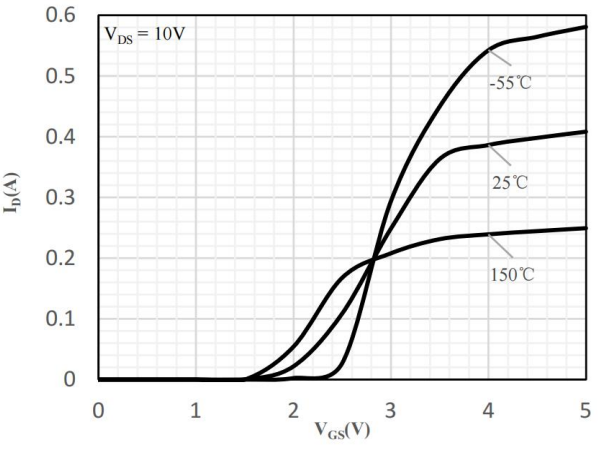


Fig 6 Transfer Characteristics

Typical Characteristics

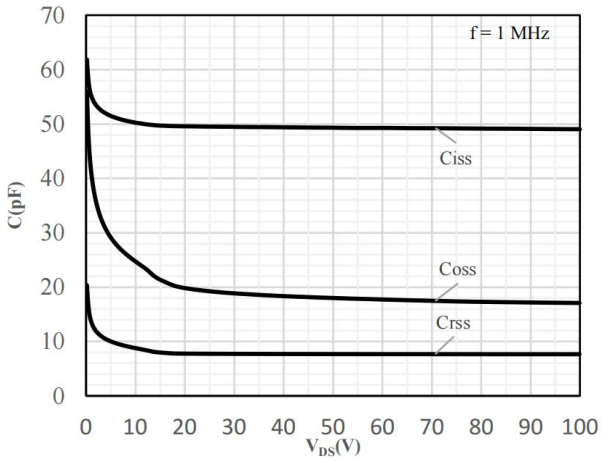


Fig 7 Capacitance Characteristics

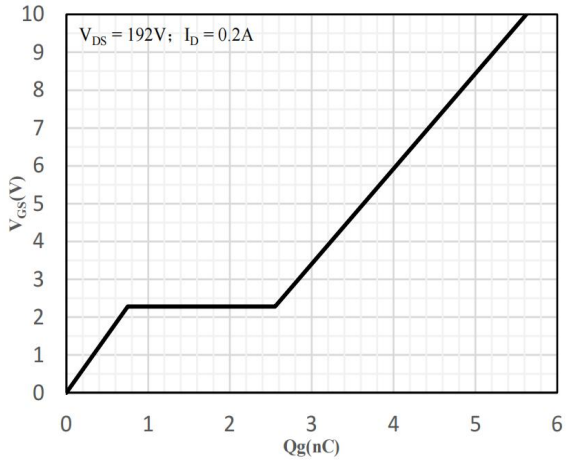


Fig 8 Gate-Charge Characteristics

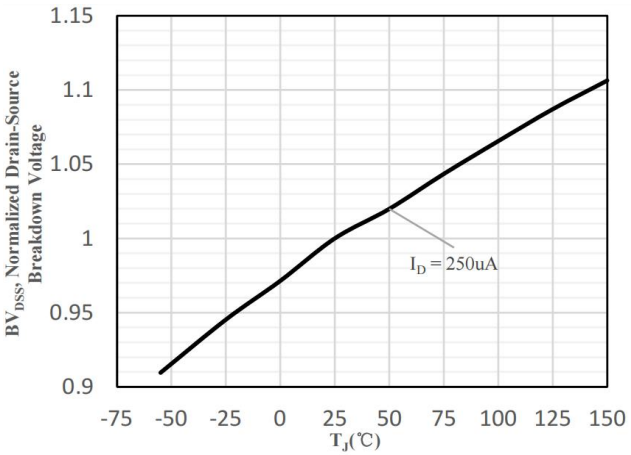


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

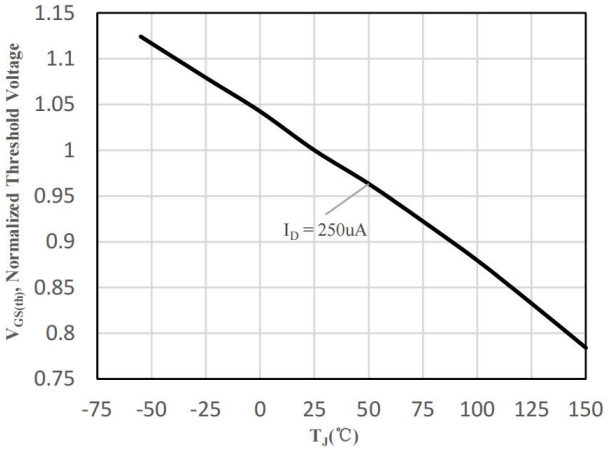


Fig 10 Normalized $V_{GS(th)}$ vs. Junction Temperature

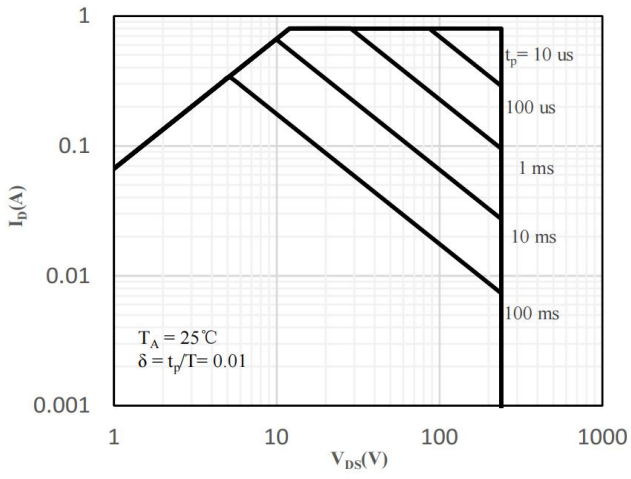


Fig 11 Safe Operation Area

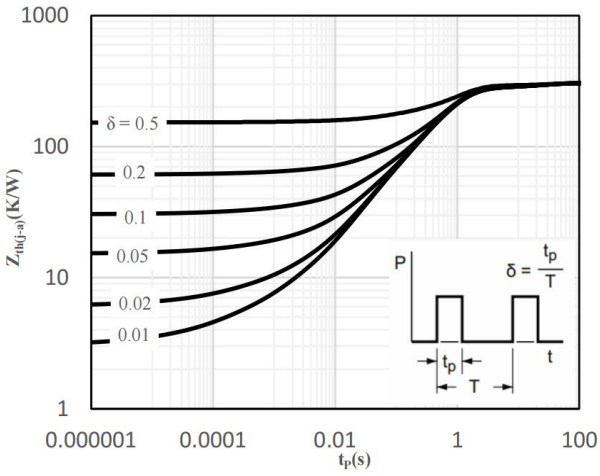
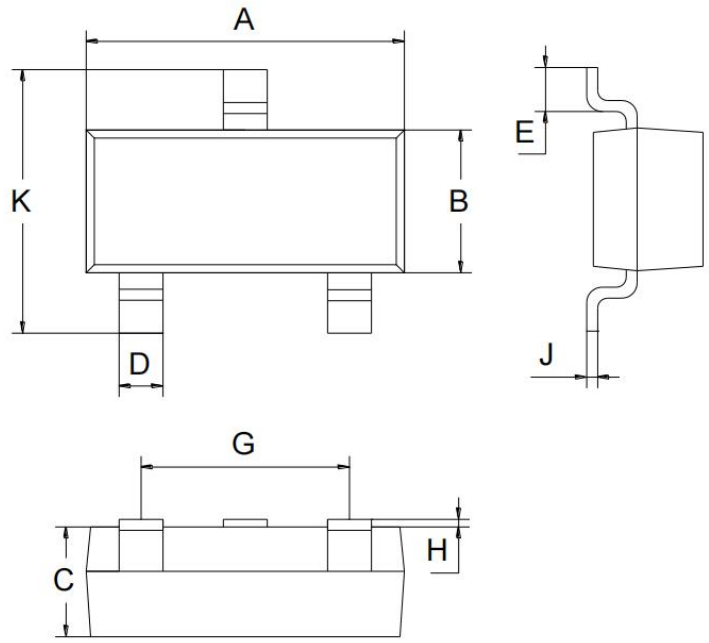


Fig 12 Maximum transient thermal impedance

SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.700	3.100	0.106	0.122
B	1.100	1.500	0.043	0.059
C	0.900	1.100	0.035	0.043
D	0.300	0.500	0.012	0.020
E	0.350	0.480	0.014	0.019
G	1.800	2.000	0.071	0.079
H	0.020	0.100	0.001	0.004
J	0.050	0.150	0.002	0.006
K	2.200	2.600	0.087	0.102