AS5P10ES-Q1

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-100V	100mΩ@-10V	-5
	120mΩ@-4.5V	

Feature

- Super high dense cell design
- Advanced trench process technology
- Reliable and rugged
- High density cell design for ultra low RDS(ON)
- ESD Protected
- Suffix "-Q1" for AEC-Q101

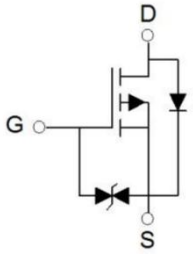
Application

- Power switch
- DC/DC converters

Package

SOP-8

Circuit diagram



Marking

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-5	A
Continuous Drain Current(T_C=100℃)	I_D(100℃)	-3.5	A
Pulsed Drain Current	I_{DM}	-30	A
Power Dissipation	P_D	3.1	W
Thermal Resistance from Junction to Ambient[1)]	$R_{\theta JA}$	40	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_C=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	-100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-100V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±10	μA
Gate threshold voltage[2)]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.9	-3	V
Drain-source on-resistance[2)]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-5A		85	100	mΩ
		V_{GS} =-4.5V, I_D =-5A		95	120	
Dynamic characteristics[3)]						
Input Capacitance	C_{iss}	V_{DS} =-50V,V_{GS} =0V,f =1MHz		3810		pF
Output Capacitance	C_{oss}			129		
Reverse Transfer Capacitance	C_{rss}			125		
Total Gate Charge	Q_g	V_{DS} =-50V,V_{GS} =-10V,I_D =-5A		70		nC
Gate-Source Charge	Q_{gs}			12.5		
Gate-Drain Charge	Q_{gd}			15.5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-50V,V_{GS}=-10V, I_D =-5A R_{GEN}=9Ω		16		nS
Turn-on rise time	t_r			73		
Turn-off delay time	$t_{d(off)}$			34		
Turn-off fall time	t_f			57		
Source-Drain Diode characteristics						
Body-Diode Continuous Current[1)]	I_S				-5	A
Diode Forward voltage[2)]	V_{SD}	V_{GS} =0V, I_S=-5A			-1.2	V
Reverse Recovery Charge	Q_{rr}	T_J=25℃, I_F=-5A, di/dt=100A/us[2)]		65.9		nC
Reverse Recovery Time	t_{rr}			88.3		nS

Notes:

1) Surface Mounted on FR4 Board, t ≤ 10 sec.

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

3) Guaranteed by design, not subject to production

Typical Characteristics

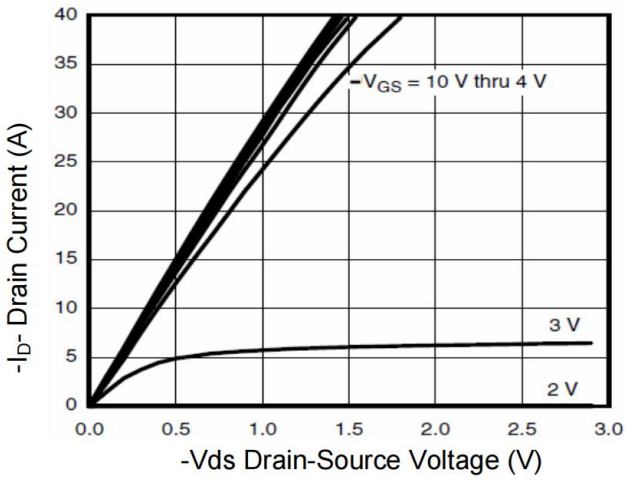


Figure 1 Output Characteristics

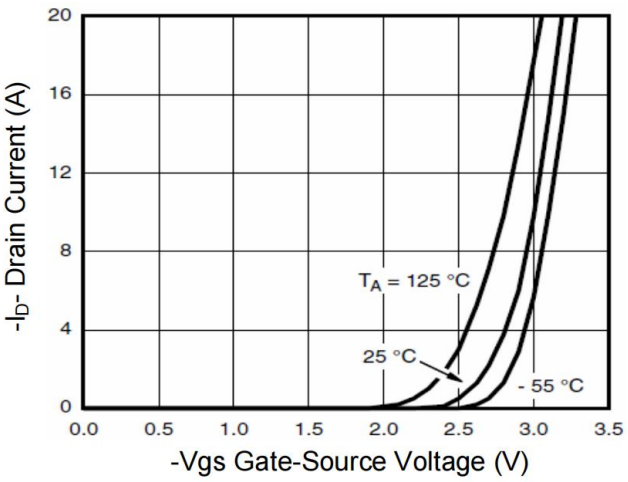


Figure 2 Transfer Characteristics

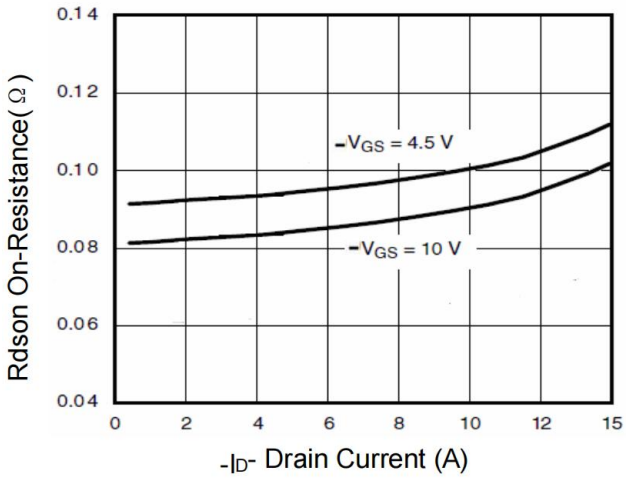


Figure 3 Rdson- Drain Current

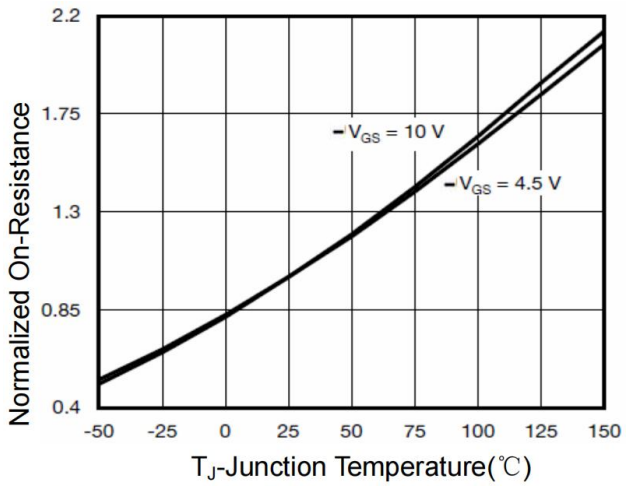


Figure 4 Rdson-JunctionTemperature

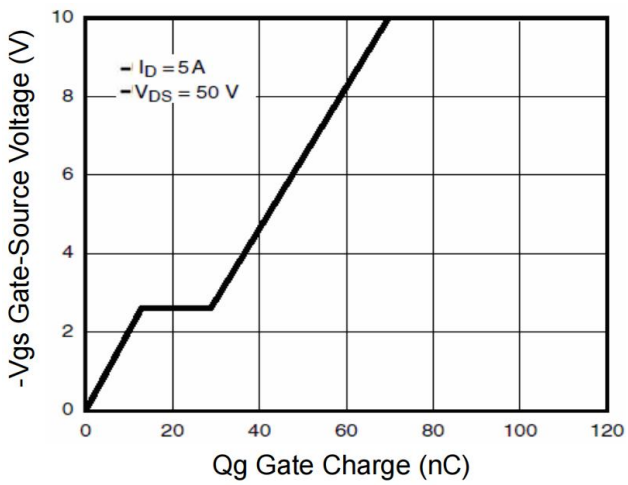


Figure 5 Gate Charge

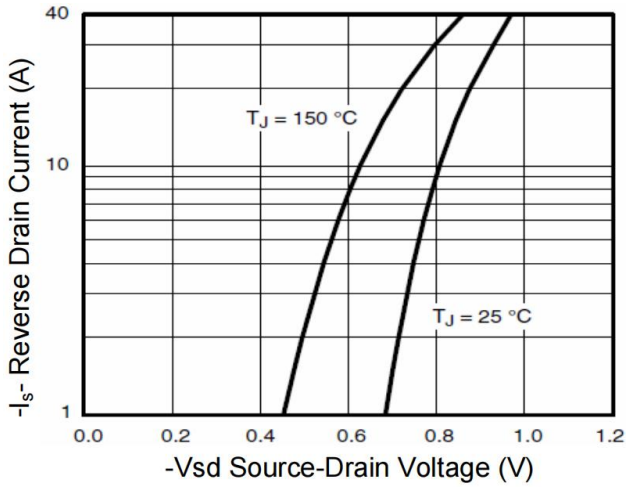


Figure 6 Source- Drain Diode Forward

Typical Characteristics

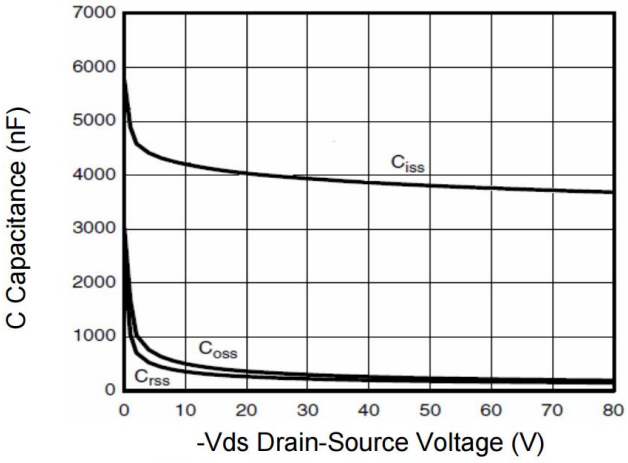


Figure 7 Capacitance vs Vds

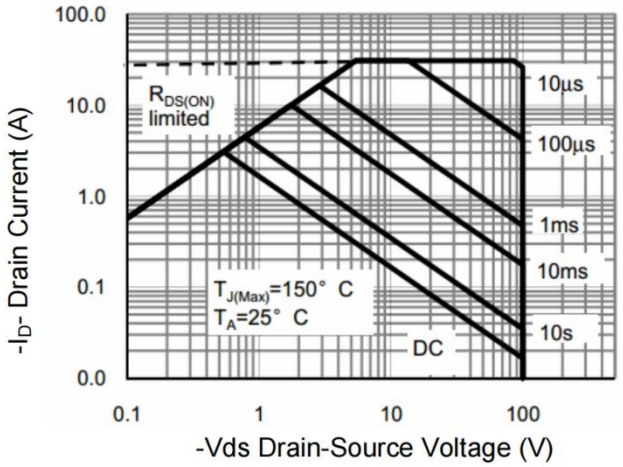


Figure 8 Safe Operation Area

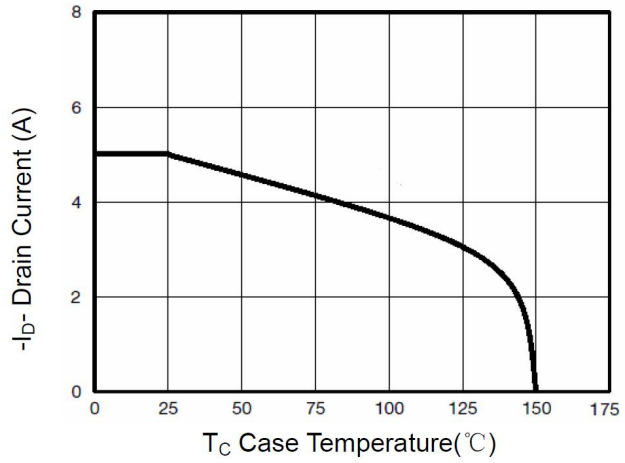


Figure 9 Drain Current vs Case Temperature

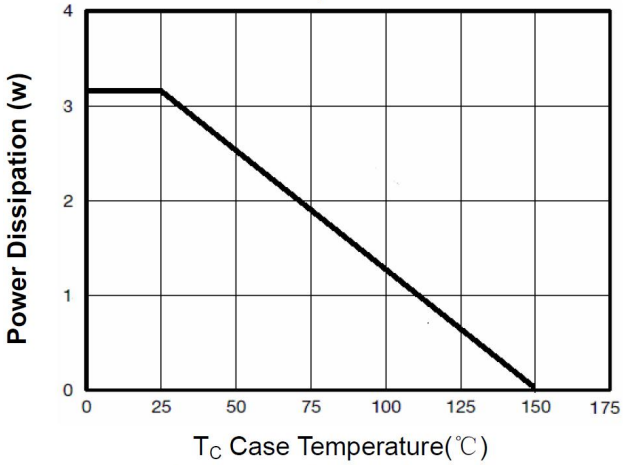


Figure 10 Power De-rating

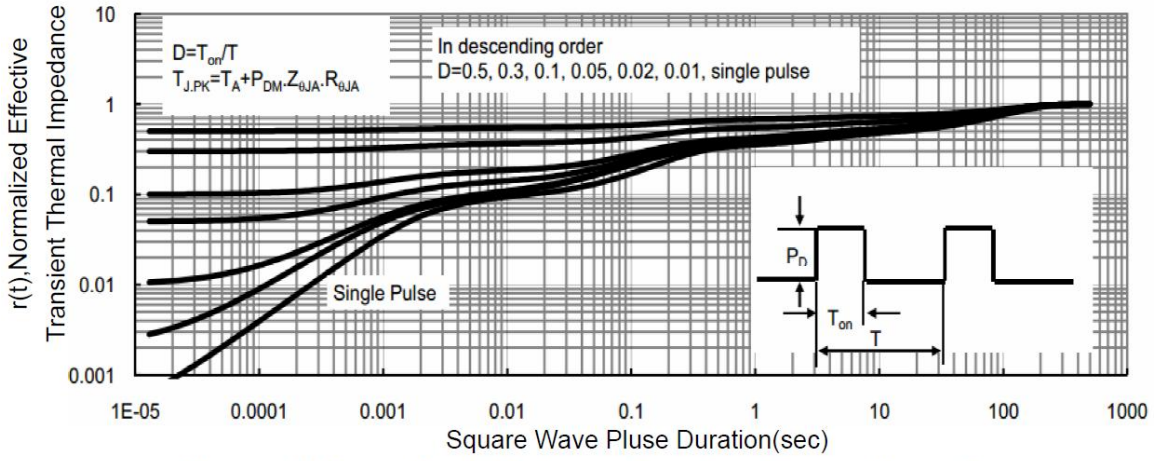
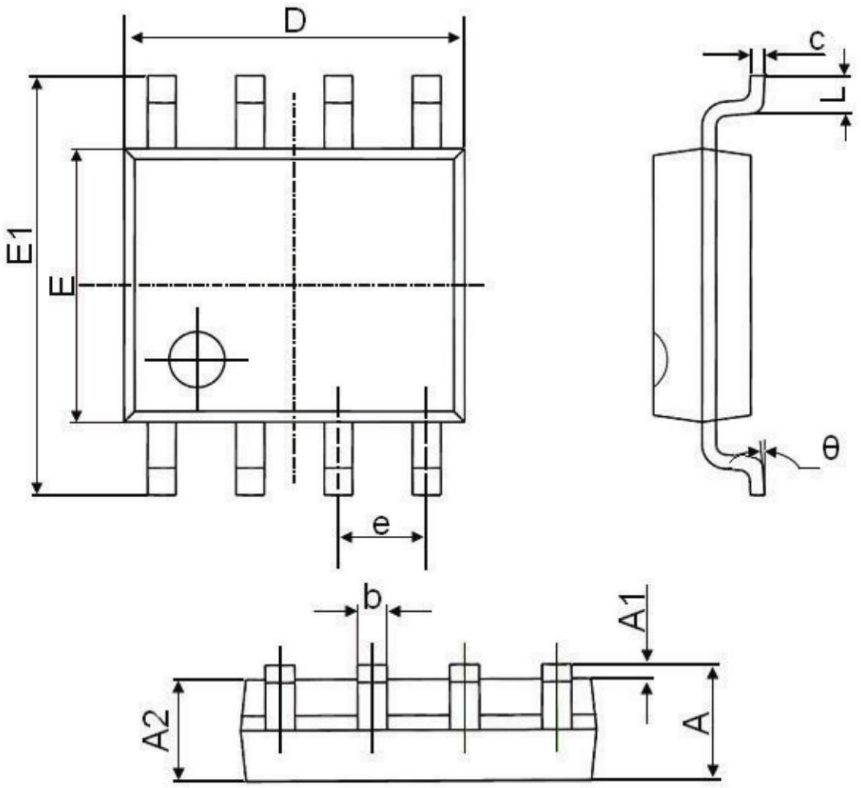


Figure 11 Normalized Maximum Transient Thermal Impedance

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	1.250	1.550	0.049	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°