

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	2.5Ω@10V	0.3A
	3.0Ω@4.5V	

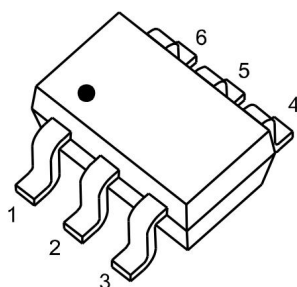
Feature

- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Low input Capacitance
- Fast Switching Speed
- Low Input / Output Leakage
- ESD Protection
- Suffix "-Q1" for AEC-Q101

Application

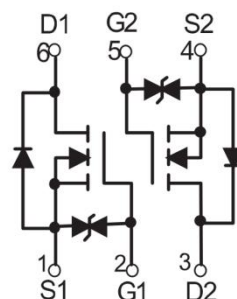
- Battery operated systems
- Solid-state relays
- Direct logic-level interface: TTL/CMOS

Package

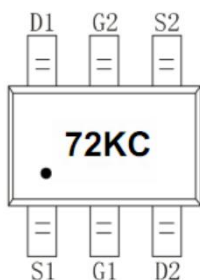


SOT-363

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	0.3	A
Continuous Drain Current ($T_A=70^{\circ}\text{C}$)	$I_D(70^{\circ}\text{C})$	0.24	A
Pulsed Drain Current ¹⁾	I_{DM}	1.5	A
Power Dissipation	P_D	0.3	W
Thermal Resistance Junction to Ambient ²⁾	$R_{\theta JA}$	416	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_J=25^{\circ}\text{C}$, 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	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.3A		1.9	2.5	Ω
		V _{GS} =4.5V, I _D =0.2A		2	3	
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz		27		pF
Output Capacitance	C _{oss}			3		
Reverse Transfer Capacitance	C _{rss}			2		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =0.3A		1.65		nC
Gtae-Source Charge	Q _{gs}			0.5		
Gtae-Drain Charge	Q _{gd}			0.18		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =0.3A R _G =6Ω		6.5		nS
Turn-on rise time	t _r			19		
Turn-off delay time	t _{d(off)}			9.6		
Turn-off fall time	t _f			84		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				0.3	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =0.3A			1.2	V
Reverse Recovery Time	T _{rr}	V _{GS} =0V, V _R =25V, I _S =0.3A di/dt =-100A/us		24		nS
Reverse Recovery Charge	Q _{rr}			3.6		nC

Notes:

- 1) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
- 2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.
- 3) Guaranteed by design, not subject to production testing.

Typical Characteristics

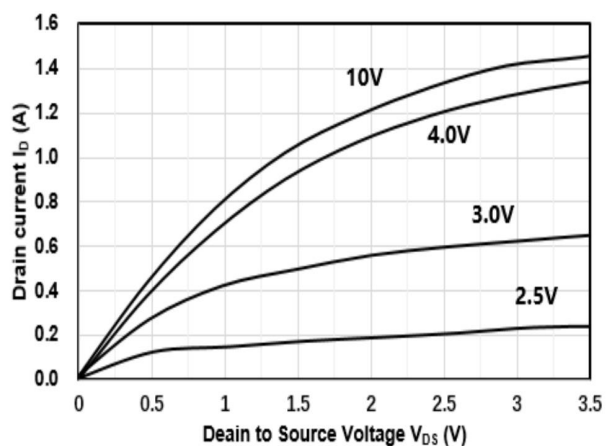


Figure1. Output Characteristics

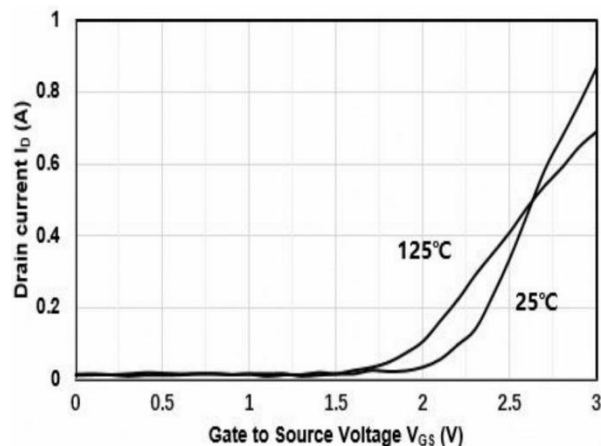


Figure2. Transfer Characteristics

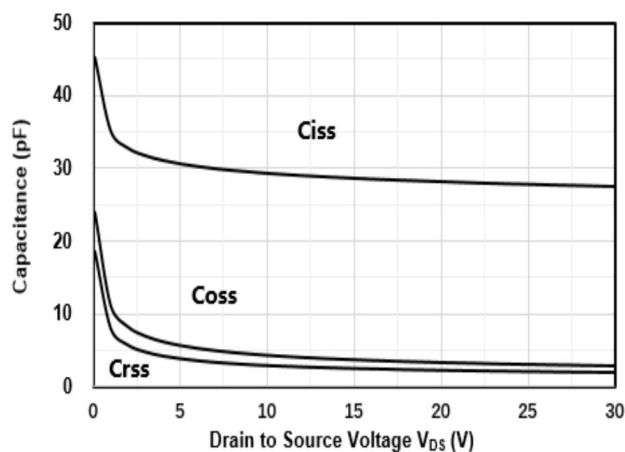


Figure3. Capacitance Characteristics

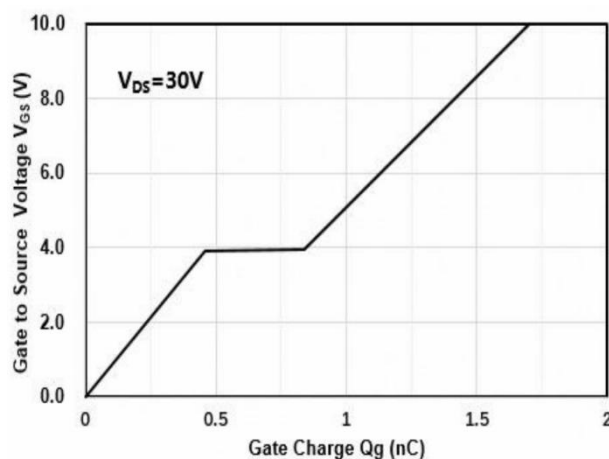


Figure4. Gate Charge

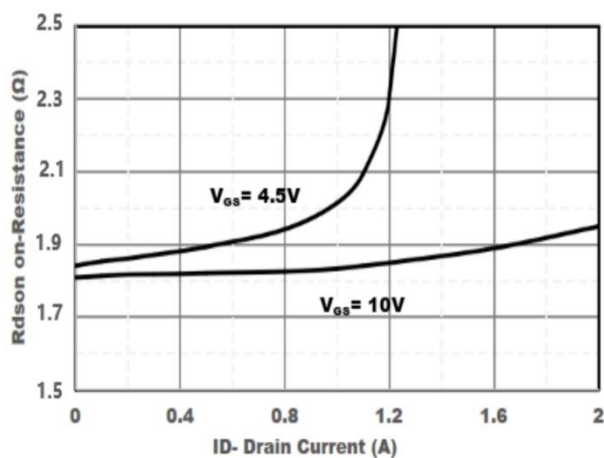


Figure5. Drain-Source on Resistance

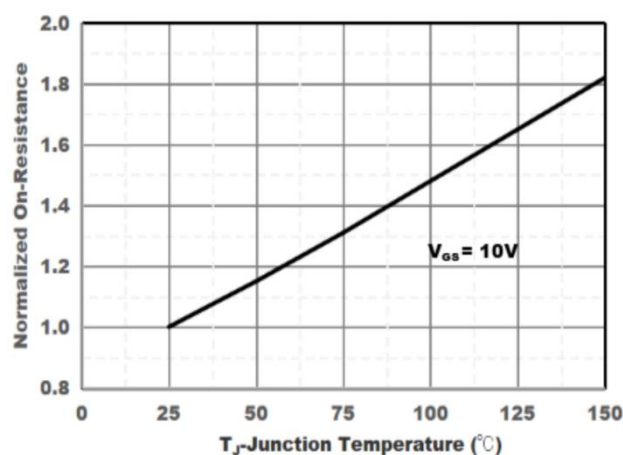


Figure6. Drain-Source on Resistance

Typical Characteristics

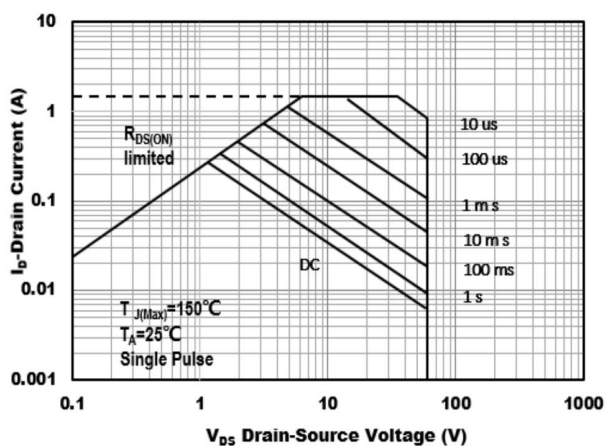


Figure7. Safe Operation Area

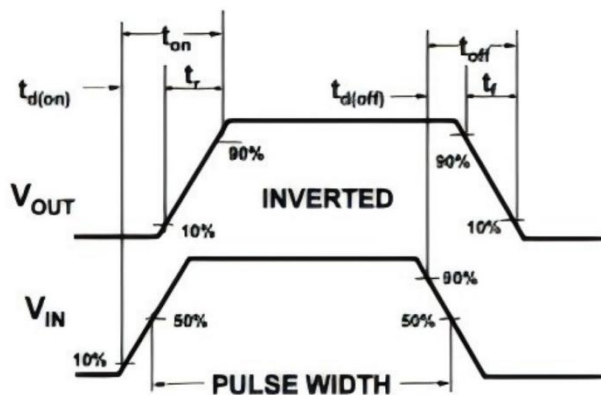


Figure8. Switching wave

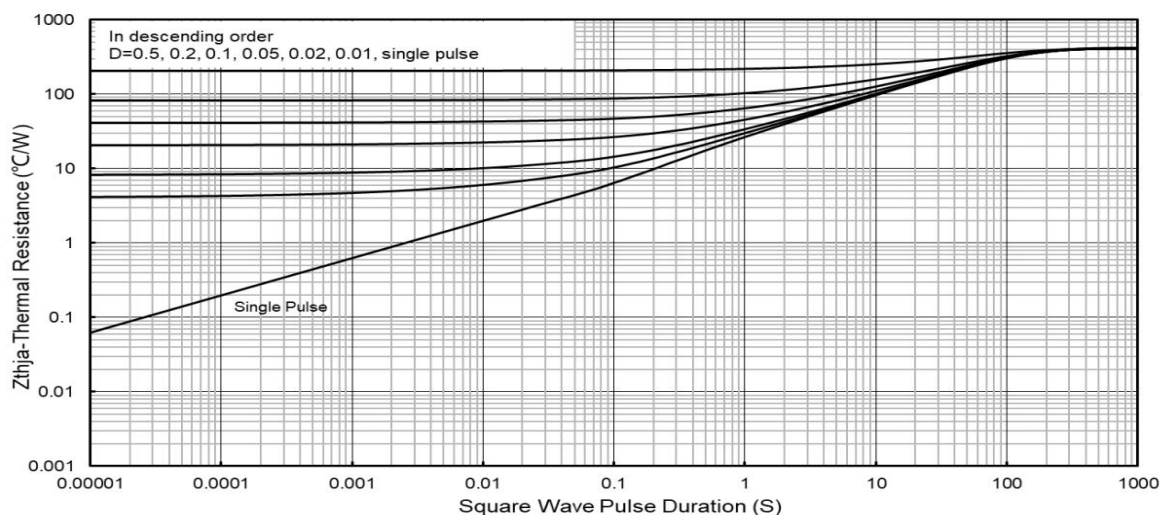
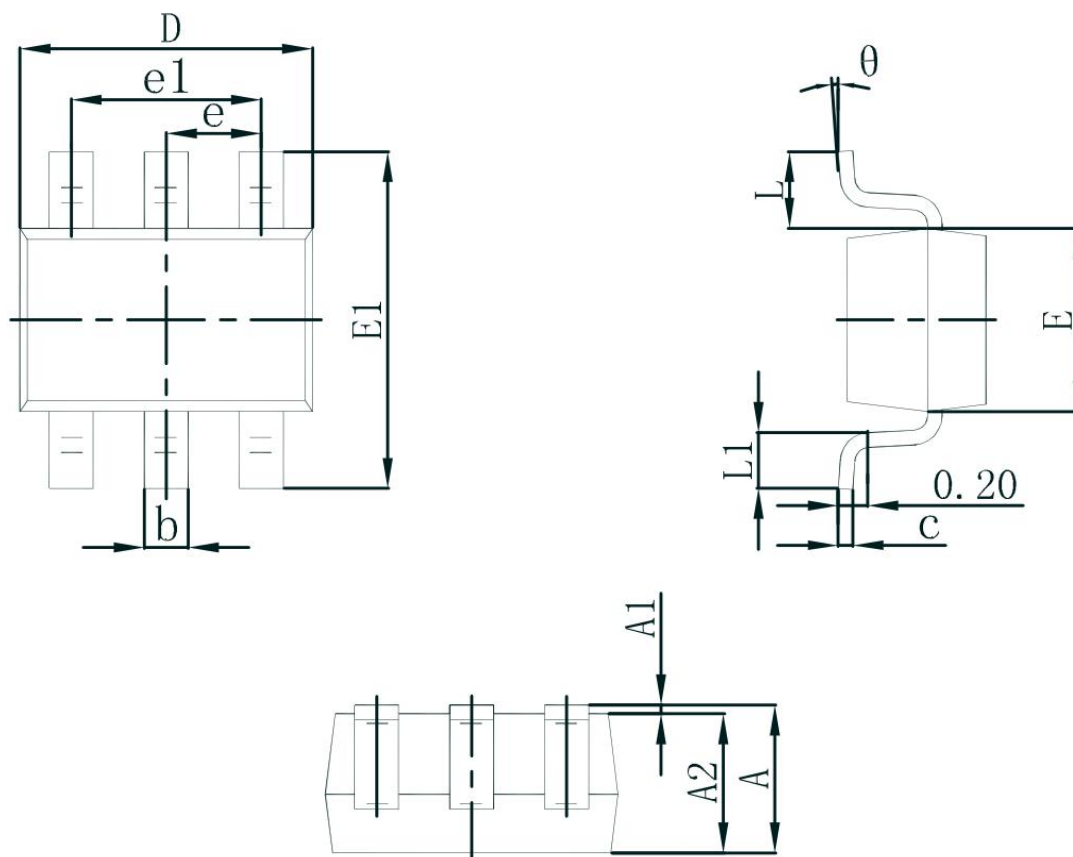


Figure9. Maximum Transient Thermal Impedance

SOT-363 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.250	0.004	0.010
D	1.800	2.200	0.071	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°