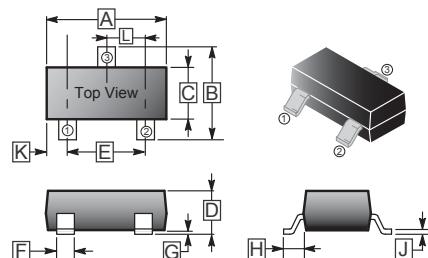


RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

## FEATURES

- $R_{DS(ON)}$ ,  $V_{GS}$ @10V,  $I_{DS}$ @500mA=3Ω
- $R_{DS(ON)}$ ,  $V_{GS}$ @4.5V,  $I_{DS}$ @200mA=4Ω
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Very Low Leakage Current In Off Condition
- Specially Designed for Battery Operated Systems, Solid-State Relays Drivers : Relays, Displays, Lamps, Solenoids, Memories, etc.
- ESD Protected 2KV HBM
- In compliance with EU RoHS 2002/95/EC directives

**SOT-323**



## MECHANICAL DATA

- Case: SOT-323 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

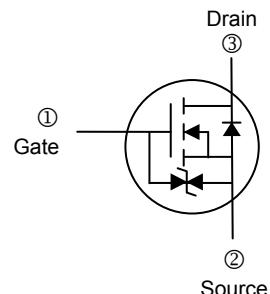
## MARKING

K72

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.80	2.20	G	0.100	REF.
B	1.80	2.45	H	0.525	REF.
C	1.15	1.35	J	0.08	0.25
D	0.80	1.10	K	-	-
E	1.20	1.40	L	0.650	TYP.
F	0.20	0.40			

## PACKAGE INFORMATION

Package	MPQ	LeaderSize
SOT-323	3K	7' inch



## ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	115	mA
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	800	mA
Maximum Power Dissipation <small><math>T_A=25^\circ\text{C}</math></small>	$P_D$	200	mW
		120	
Thermal Resistance Junction-Ambient (PCB mounted) <sup>2</sup>	$R_{QJA}$	625	$^\circ\text{C} / \text{W}$
Operating Junction and Storage Temperature	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$

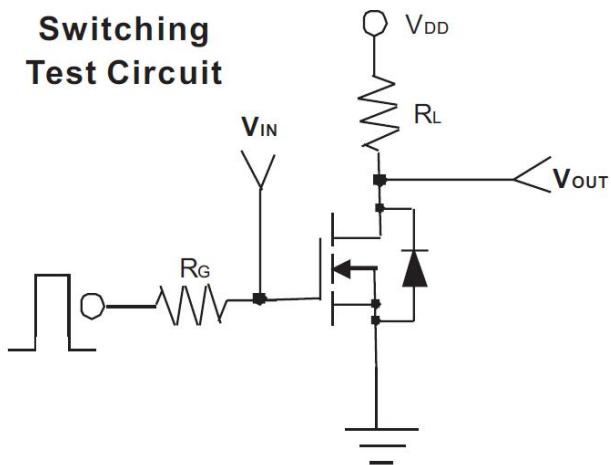
Notes:

1. Maximum DC current limited by the package.
2. Surface mounted on FR4 board,  $t < 5\text{sec}$ .

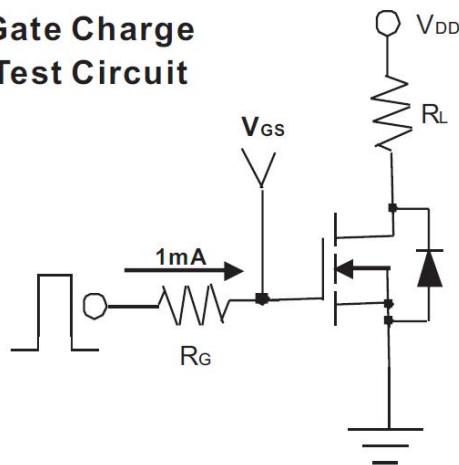
**N-CHANNEL ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ. <sup>2</sup>	Max.	Unit	Test Conditions
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	60	-	-	V	$V_{GS}=0$ , $I_D=10\mu\text{A}$
Gate-Threshold Voltage	$V_{GS(\text{th})}$	1	-	2.5		$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$
Drain-Source On-Resistance	$R_{DS(\text{ON})}$	-	-	4	$\Omega$	$V_{GS}=4.5\text{V}$ , $I_D=200\text{mA}$
		-	-	3		$V_{GS}=10\text{V}$ , $I_D=500\text{mA}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{DS}=60\text{V}$ , $V_{GS}=0$
Gate-Body Leakage Current	$I_{GSS}$	-	-	$\pm 10$	$\mu\text{A}$	$V_{DS}=0$ , $V_{GS}=\pm 20\text{V}$
Forward Transconductance	$g_f$	100	-	-	$\text{mS}$	$V_{DS}=15\text{V}$ , $I_D=250\text{mA}$
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	-	-	0.8	nC	$V_{DS}=15\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=200\text{mA}$
Turn-On Time	$t_{(\text{on})}$	-	-	20	nS	$V_{DD}=30\text{V}$ , $R_L=150\Omega$ ,
Turn-Off Time	$t_{(\text{off})}$	-	-	40		$I_D=200\text{mA}$ , $V_{GEN}=10\text{V}$ , $R_G=10\Omega$
Input Capacitance	$C_{iss}$	-	-	35	pF	$V_{DS}=25\text{V}$ , $V_{GS}=0\text{V}$ , $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	-	10		
Reverse Transfer Capacitance	$C_{rss}$	-	-	5		
<b>Source-Drain Diode</b>						
Diode Forward Voltage	$V_{SD}$	-	0.82	1.3	V	$I_S=200\text{mA}$ , $V_{GS}=0\text{V}$
Continuous Diode Forward Current	$I_S$	-	-	115	mA	
Pulse Diode Forward Current	$I_{SM}$	-	-	800	mA	

**Switching Test Circuit**



**Gate Charge Test Circuit**



## CHARACTERISTIC CURVE

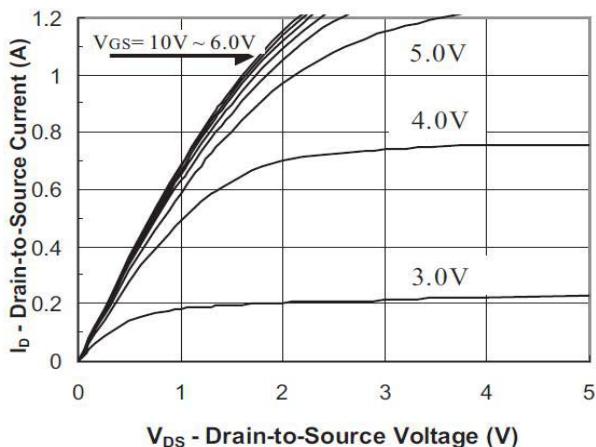


FIG.1-Output Characteristic

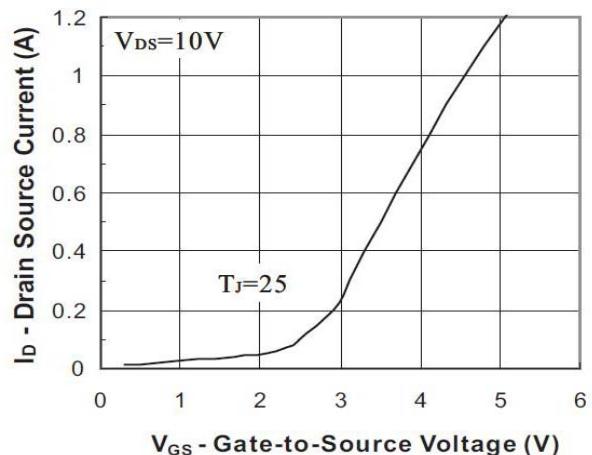


FIG.2-Transfer Characteristic

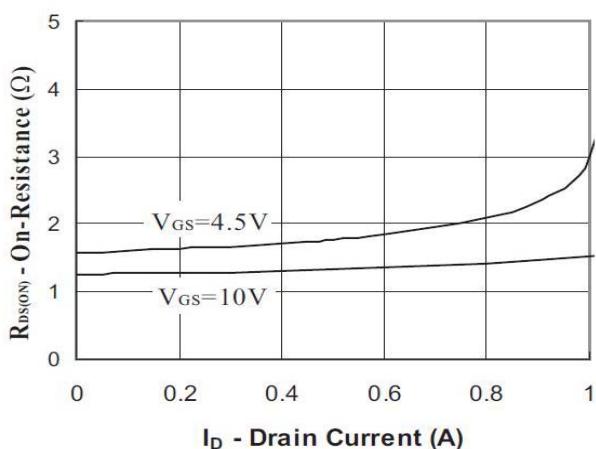


FIG.3-On Resistance vs Drain Current

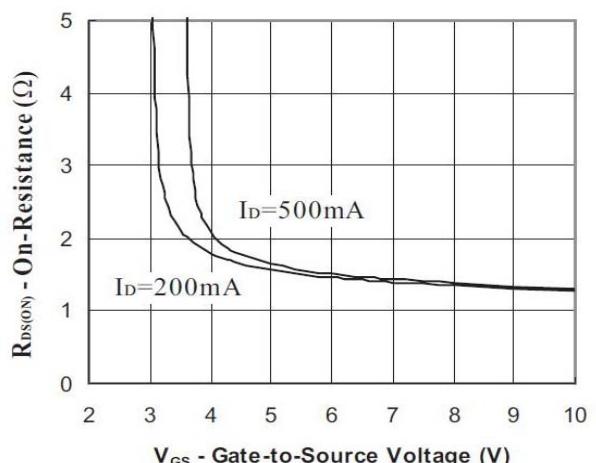


FIG.4- On Resistance vs Gate to Source Voltage

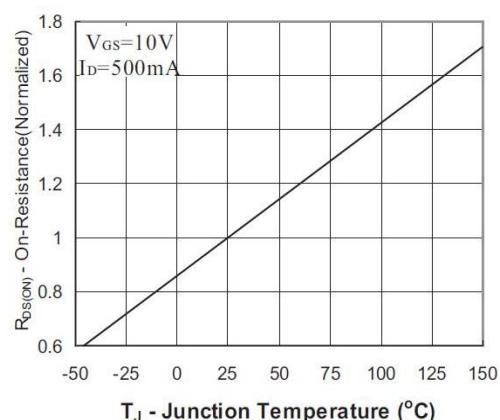
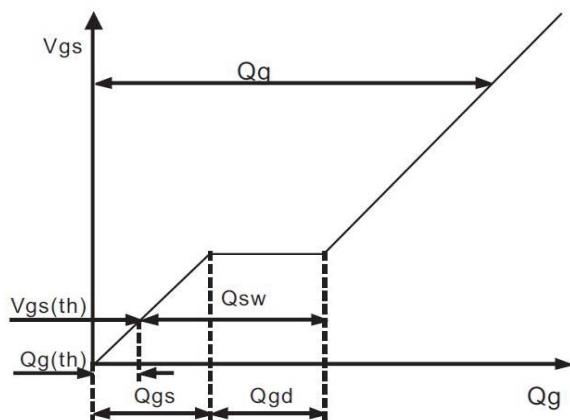
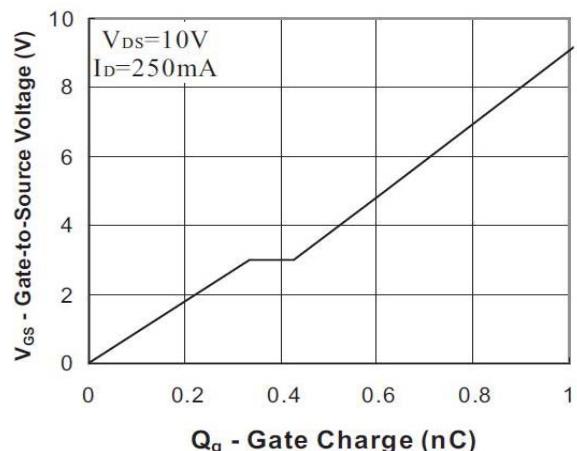


FIG.5-On Resistance vs Junction Temperature

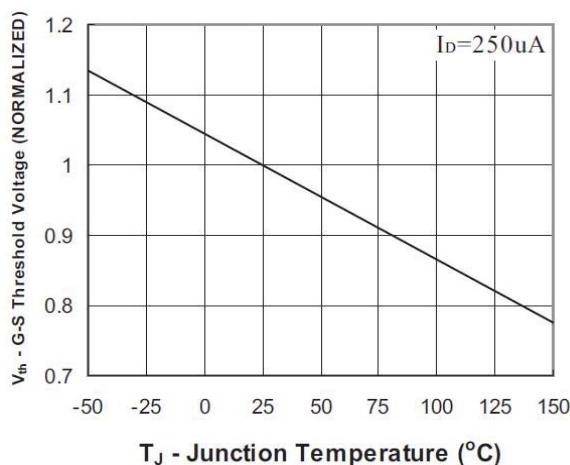
## CHARACTERISTIC CURVE



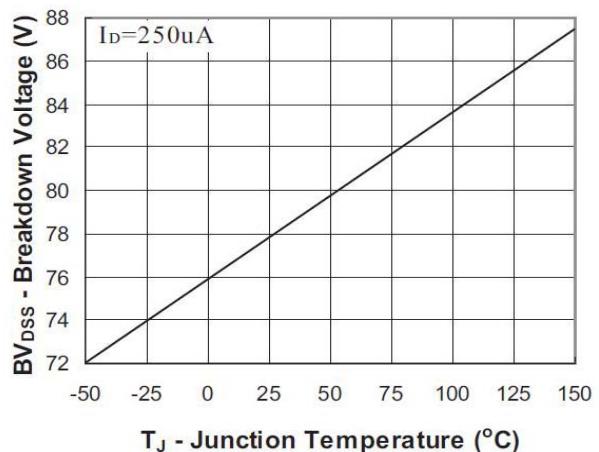
**FIG.6-Gate Charge Waveform**



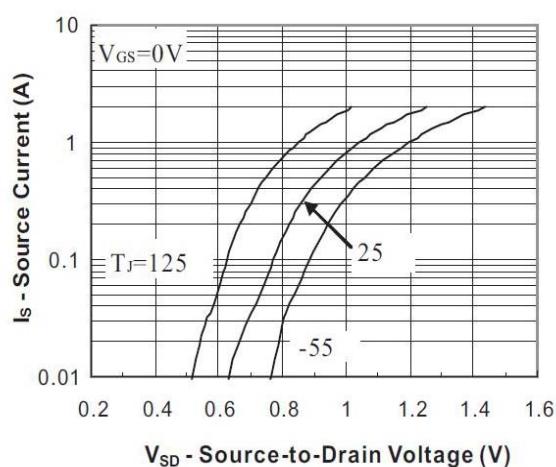
**FIG.7-Gate Charge**



**FIG.8-Threshold Voltage vs Temperature**



**FIG.9-Breakdown Voltage vs Junction Temperature**



**FIG.10-Source-Drain Diode Forward Voltage**