

P-Channel MOSFET

$BV_{DSS}, T_A=25^{\circ}\text{C}$	$I_D, T_A=25^{\circ}\text{C}$	$R_{DS(on)}, \text{typ}@-10\text{V}$
-100V	-2A	0.52Ω

Features

- Super Low Gate Charge
- Excellent dv/dt effect decline
- Green Device Available
- Advanced high cell density trench technology

Marking: K71

Description

The SK2371AA is the high cell density trenched P-Channel MOSFET, which provides excellent $R_{DS(on)}$ and efficiency for most of the small power switching and load switch applications. The SK2371AA meets the RoHS and Green Product requirement with full function reliability approved.

Absolute Maximum Ratings($T_A=25^{\circ}\text{C}$, unless otherwise noted.)

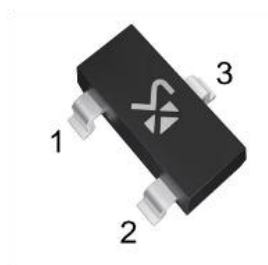
Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	-100	V
Gate-source Voltage	V_{GS}	±20	V
Drain Current-Continuous $V_{GS}@-10\text{V}^{(\text{note } 1)}, T_A=25^{\circ}\text{C}$	I_D	-2	A
Drain Current-Continuous $V_{GS}@-10\text{V}^{(\text{note } 1)}, T_A=70^{\circ}\text{C}$		-1.5	A
Pulsed Drain Current ^(note 2)	I_{DM}	-3	A
Total Power Dissipation ^(note 3)	P_D	1	W
Operating Junction Temperature Range	T_J	-55~150	°C
Storage Temperature Range	T_{STG}	-55~150	°C

Thermal Characteristics

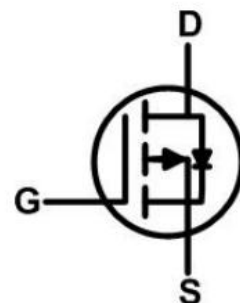
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to ambient ^(note 1) , Max.	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Case ^(note 1) , Max.	$R_{\theta JC}$	80	°C/W

Electrical Characteristics($T_J=25^{\circ}\text{C}$, unless otherwise noted.)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						



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Drain-source Breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-100			V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C , I _D =-1mA		-0.0624		V/°C
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =-80V, V _{GS} =0V,T _J =25°C			-10	μA
		V _{DS} =-80V, V _{GS} =0V,T _J =55°C			-100	μA
Gate-source 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	-1.0	-1.5	-2.5	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}			4.5		mV/°C
Static Drain to Source on resistance ^(note 2)	R _{DS(on)}	V _{GS} = -10V, I _D = -1.5A		0.52	0.65	Ω
		V _{GS} = -4.5V, I _D = -1A		0.56	0.7	Ω
Forward transconductance	g _{fs}	V _{DS} = -5V, I _D =-0.8A		3		S
Dynamic Characteristics						
Total Gate Charge(-4.5V)	Qg	V _{DS} =-15V,I _D =-0.5A,V _{GS} =-4.5V		4.5		nC
Gate to Source Charge	Qgs			1.14		nC
Gate to Drain Charge	Qgd			1.5		nC
Internal Gate Resistance	R _G	f=1MHz		16	32	Ω
Input Capacitance	C _{iss}	V _{DS} =-15V,V _{GS} =0V, f=1MHz		553		pF
Output Capacitance	C _{oss}			29		pF
Reverse Capacitance	C _{rss}			20		pF
Switching Characteristics						
Turn-On Delay Time	td(on)	V _{GS} = -10V, V _{DD} = -50V, R _G = 3.3Ω, I _D = -0.5A		13.6		nS
Turn-On Rise Time	tr			6.8		nS
Turn-Off Delay Time	td(off)			34		nS
Turn-Off Fall Time	tf			3		nS
Source-Drain Diode Characteristics						
Continuous Diode Forward Current ^(note 1,4)	I _S	V _{GS} = V _{DD} = 0V,Force Current			-0.9	A
Pulsed Diode Forward Current ^(note 2,4)	I _{SM}				-1.8	A
Diode Forward Voltage ^(note 2)	V _{SD}	V _{GS} =0V, I _S =-1A,T _J =25°C			-1.2	V

Notes:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 3.The power dissipation is limited by 150°C junction temperature.
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

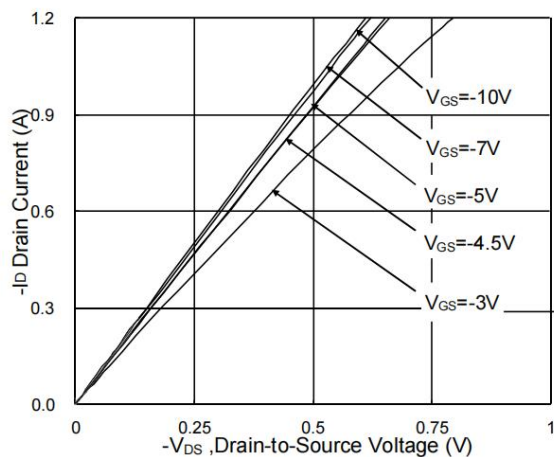


Fig.1 Typical Output Characteristics

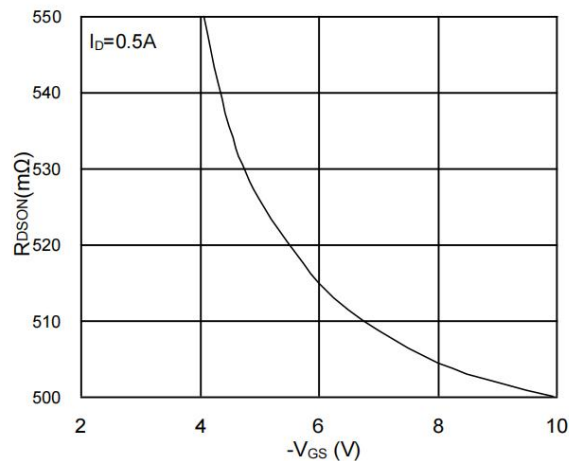


Fig.2 On-Resistance vs. Gate-Source

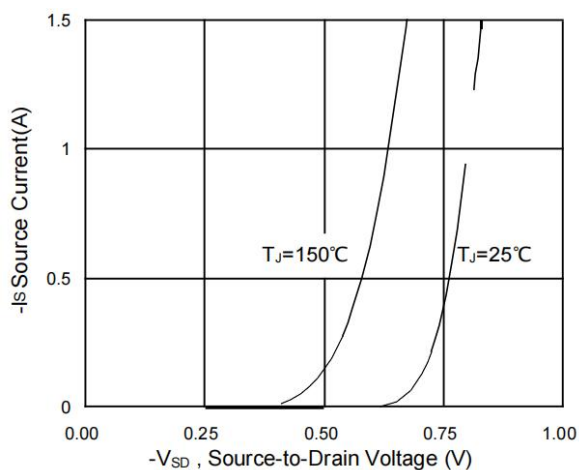


Fig.3 Forward Characteristics Of Reverse

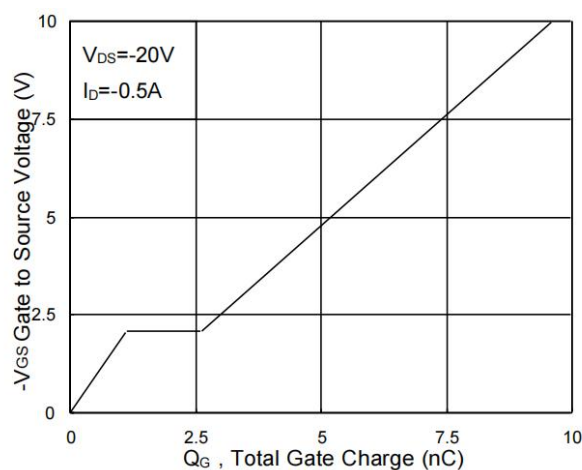


Fig.4 Gate-Charge Characteristics

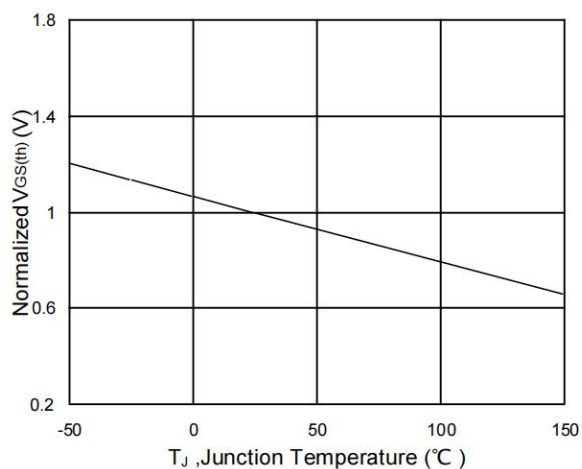


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

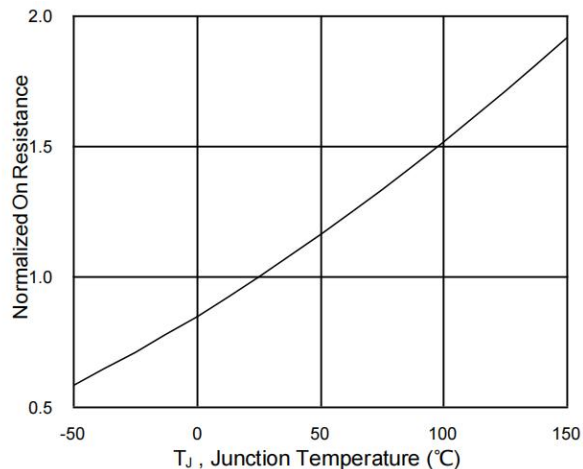


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

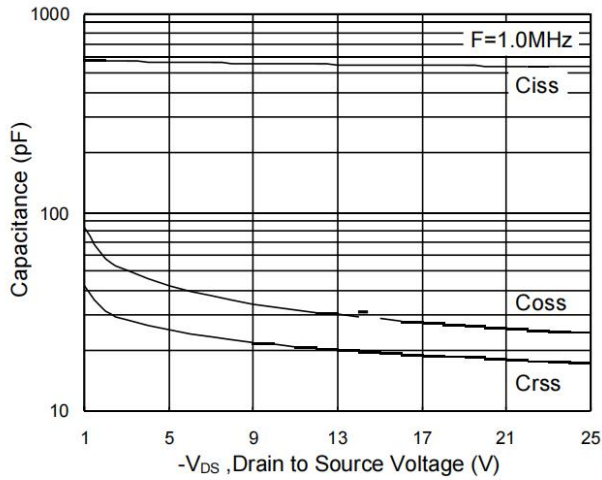


Fig.7 Capacitance

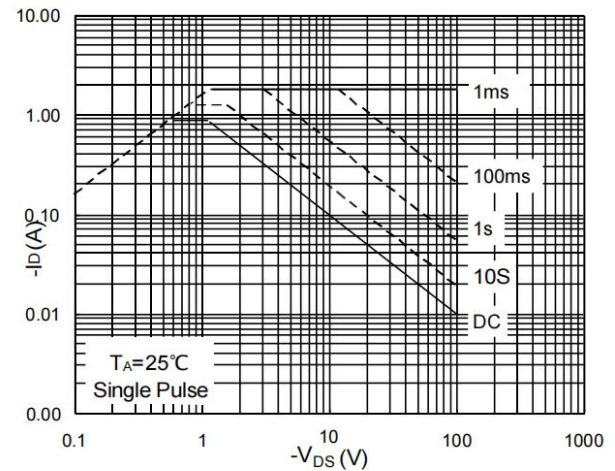


Fig.8 Safe Operating Area

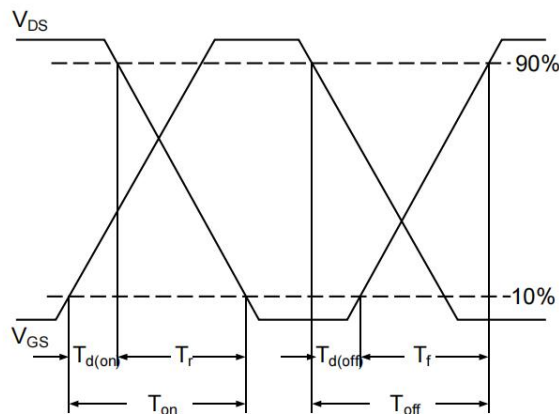


Fig.10 Switching Time Waveform

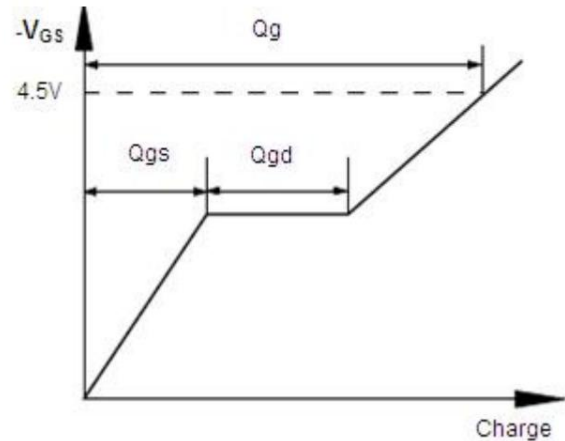


Fig.11 Gate Charge Waveform

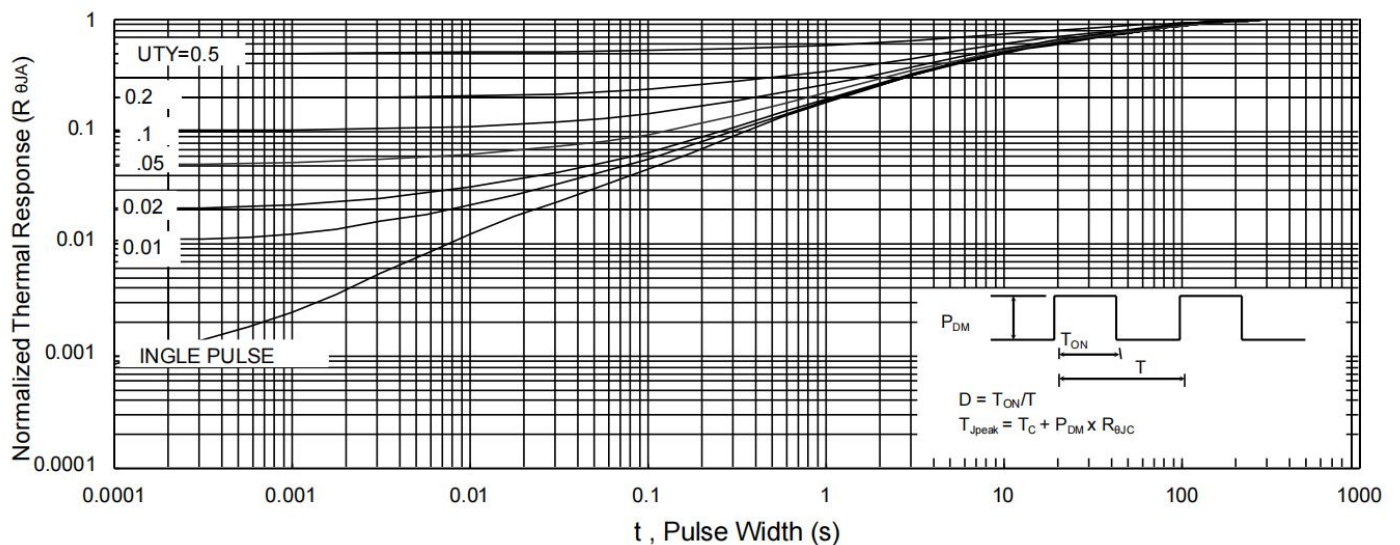


Fig.9 Normalized Maximum Transient Thermal Impedance

Package Information

SOT-23

Dimensions in mm

