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Transistors

2.5V Drive Nch+Nch MOSFET

QS5K2

●Structure

Silicon N-channel MOSFET

●Features

- 1) Low On-resistance.
- 3) Space saving, small surface mount package (TSMT5).

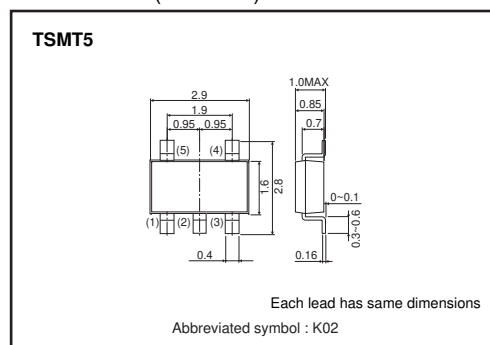
●Applications

Switching

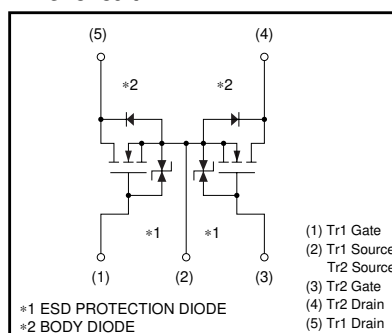
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
QS5K2		○

●Dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

<It is the same ratings for the Tr1 and Tr2>

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DSS}	30	V
Gate-source voltage	V_{GSS}	12	V
Drain current	Continuous	I_D	± 2.0 A
	Pulsed	I_{DP} *1	± 8.0 A
Source current (Body diode)	Continuous	I_S	0.8 A
	Pulsed	I_{SP} *1	3.2 A
Total power dissipation	P_D *2	1.25	W / TOTAL
		0.9	W / ELEMENT
Channel temperature	T_{ch}	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

*1 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$
 *2 Mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}$ *	100	°C/W
		139	°C/W

* Mounted on a ceramic board

Transistors

●Electrical characteristics (Ta=25°C)

<It is the same characteristics for the Tr1 and Tr2>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	–	–	10	μA	V _{GS} =12V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR) DSS}	30	–	–	V	I _D = 1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	–	–	1	μA	V _{DS} = 30V, V _{GS} =0V
Gate threshold voltage	V _{GS (th)}	0.5	–	1.5	V	V _{DS} = 10V, I _D = 1mA
Static drain-source on-state resistance	R _{DS (on)} *	–	71	100	mΩ	I _D = 2A, V _{GS} = 4.5V
		–	76	107	mΩ	I _D = 2A, V _{GS} = 4.0V
		–	110	154	mΩ	I _D = 2A, V _{GS} = 2.5V
Forward transfer admittance	Y _{fs} *	1.5	–	–	S	V _{DS} = 10V, I _D = 2A
Input capacitance	C _{iss}	–	175	–	pF	V _{DS} = 10V
Output capacitance	C _{oss}	–	50	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	–	25	–	pF	f=1MHz
Turn-on delay time	t _{d (on)} *	–	8	–	ns	V _{DD} ≐ 15V I _D = 1A
Rise time	t _r *	–	10	–	ns	V _{GS} = 4.5V
Turn-off delay time	t _{d (off)} *	–	21	–	ns	R _L = 15Ω
Fall time	t _f *	–	8	–	ns	R _G =10Ω
Total gate charge	Q _g *	–	2.8	3.9	nC	V _{DD} ≐ 15V
Gate-source charge	Q _{gs} *	–	0.6	–	nC	V _{GS} = 4.5V
Gate-drain charge	Q _{gd} *	–	0.8	–	nC	I _D = 2A

*Pulsed

●Body diode characteristics (Source-drain) (Ta=25°C)

<It is the same characteristics for the Tr1 and Tr2>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V _{SD} *	–	–	1.2	V	I _S = 3.2A, V _{GS} =0V

* Pulsed

Transistors

●Electrical characteristics curves

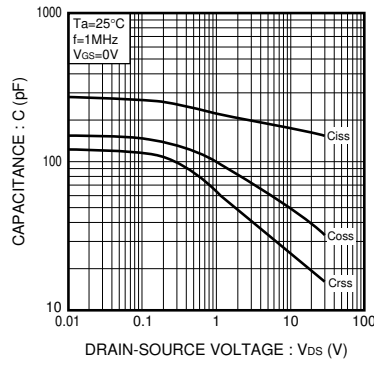


Fig.1 Typical Capacitance vs. Drain-Source Voltage

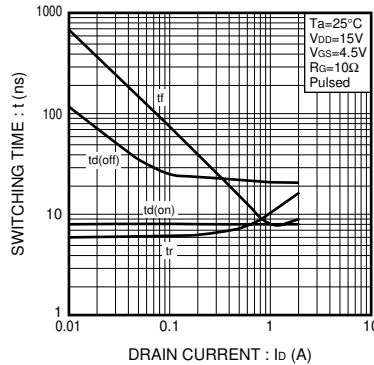


Fig.2 Switching Characteristics

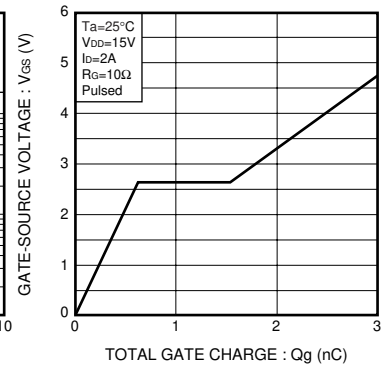


Fig.3 Dynamic Input Characteristics

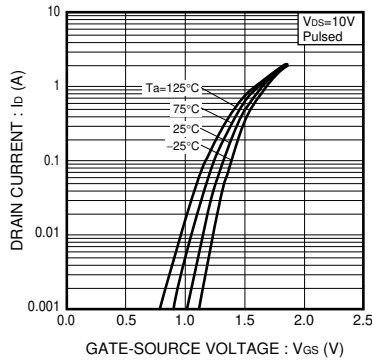


Fig.4 Typical Transfer Characteristics

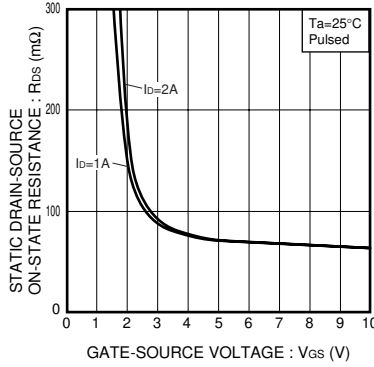


Fig.5 Static Drain-Source On-State Resistance vs. Gate source Voltage

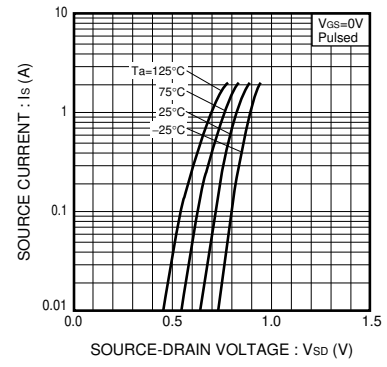


Fig.6 Source Current vs. Source-Drain Voltage

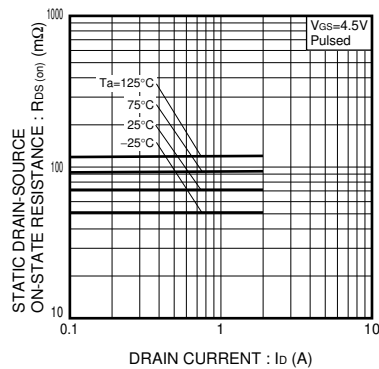


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (I)

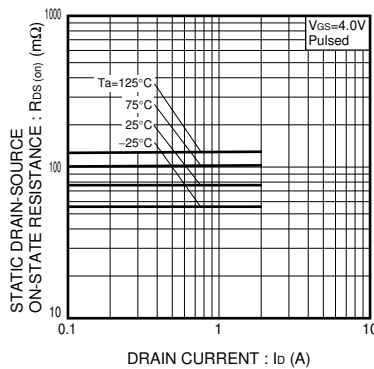


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current (II)

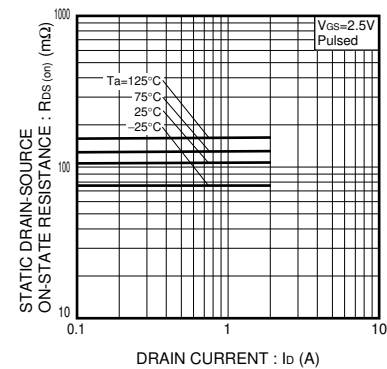


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current (III)

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