



# 1.2V Drive Pch MOSFET

## RZE002P02

### ●Structure

Silicon P-channel MOSFET

### ●Features

- 1) High speed switching.
- 2) Small package (EMT3).
- 3) 1.2V drive.

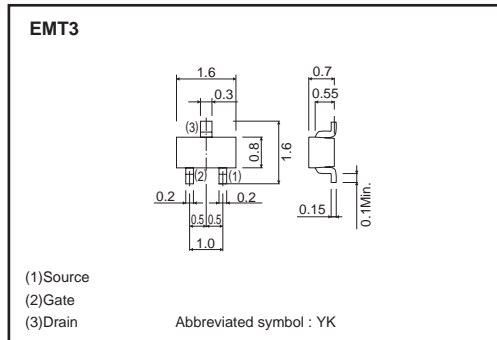
### ●Applications

Switching

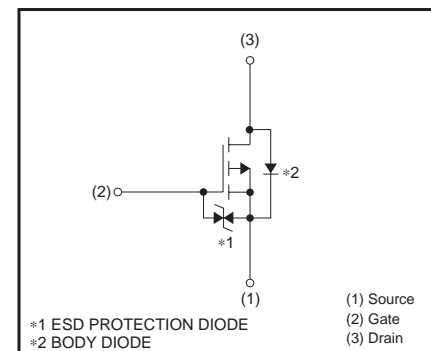
### ●Package specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
RZE002P02		○

### ●Dimensions (Unit : mm)



### ●Inner circuit



### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	$V_{DS}$	-20	V
Gate-source voltage	$V_{GS}$	±10	V
Drain current	Continuous	$I_D$	±200 mA
	Pulsed	$I_{DP}$ *1	±800 mA
Source current (Body diode)	Continuous	$I_S$	-100 mA
	Pulsed	$I_{SP}$ *1	-800 mA
Total power dissipation	$P_D$ *2	150	mW
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 Each terminal mounted on a recommended land

### ●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	$R_{th(ch-a)}$ *	833	°C/W

\* Each terminal mounted on a recommended land

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	$I_{GSS}$	–	–	$\pm 10$	$\mu A$	$V_{GS} = \pm 10V, V_{DS} = 0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	–20	–	–	V	$I_D = -1mA, V_{GS} = 0V$
Zero gate voltage drain current	$I_{DSS}$	–	–	–1	$\mu A$	$V_{DS} = -20V, V_{GS} = 0V$
Gate threshold voltage	$V_{GS(th)}$	–0.3	–	–1.0	V	$V_{DS} = -10V, I_D = -100\mu A$
Static drain-source on-state resistance	$R_{DS(on)}^*$	–	0.8	1.2	$\Omega$	$I_D = -200mA, V_{GS} = -4.5V$
		–	1.0	1.5	$\Omega$	$I_D = -100mA, V_{GS} = -2.5V$
		–	1.3	2.2	$\Omega$	$I_D = -100mA, V_{GS} = -1.8V$
		–	1.6	3.5	$\Omega$	$I_D = -40mA, V_{GS} = -1.5V$
		–	2.4	9.6	$\Omega$	$I_D = -10mA, V_{GS} = -1.2V$
Forward transfer admittance	$ Y_{fs} ^*$	0.2	–	–	S	$V_{DS} = -10V, I_D = -200mA$
Input capacitance	$C_{iss}$	–	115	–	pF	$V_{DS} = -10V$
Output capacitance	$C_{oss}$	–	10	–	pF	$V_{GS} = 0V$
Reverse transfer capacitance	$C_{rss}$	–	6	–	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}^*$	–	6	–	ns	$V_{DD} \doteq -10V$
Rise time	$t_r^*$	–	4	–	ns	$I_D = -100mA$
Turn-off delay time	$t_{d(off)}^*$	–	17	–	ns	$V_{GS} = -4.5V$
Fall time	$t_f^*$	–	17	–	ns	$R_L \doteq 100\Omega$
Total gate charge	$Q_g^*$	–	1.4	–	nC	$V_{DD} \doteq -10V, R_L \doteq 50\Omega$
Gate-source charge	$Q_{gs}^*$	–	0.3	–	nC	$I_D = -200mA, R_G = 10\Omega$
Gate-drain charge	$Q_{gd}^*$	–	0.3	–	nC	$V_{GS} = -4.5V$

\*Pulsed

### ●Body diode characteristics (Source-drain)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	$V_{SD}^*$	–	–	–1.2	V	$I_S = -200mA, V_{GS} = 0V$

\*Pulsed

## ●Electrical characteristics curves

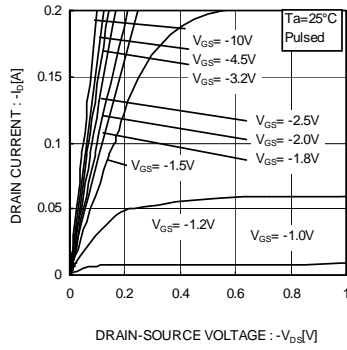


Fig.1 Typical Output Characteristics ( I )

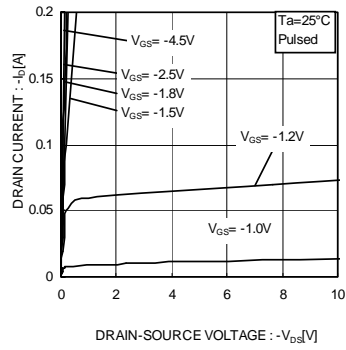


Fig.2 Typical Output Characteristics( II )

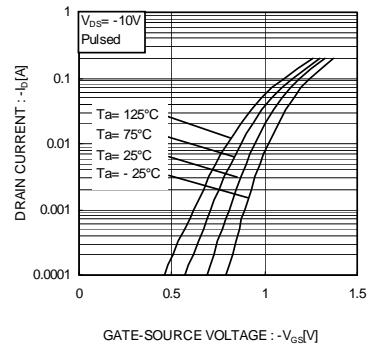


Fig.3 Typical Transfer Characteristics

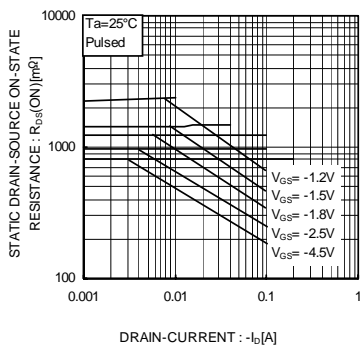


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current( I )

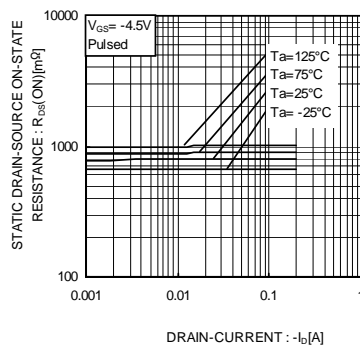


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current( II )

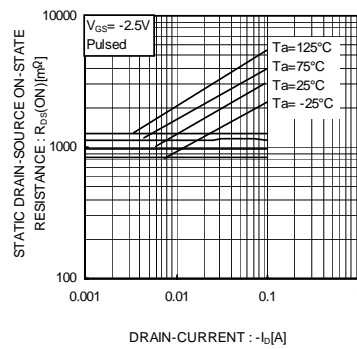


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current( III )

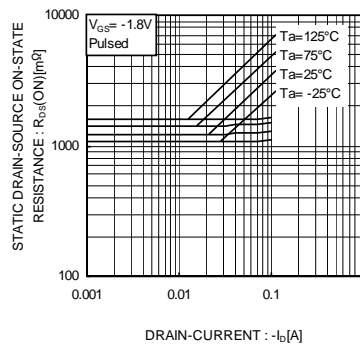


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current( IV )

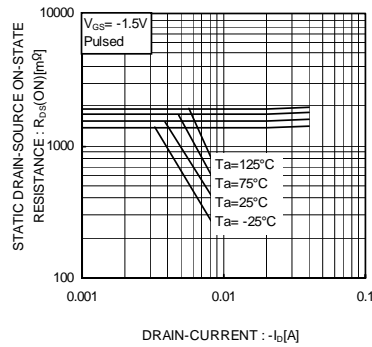


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current( V )

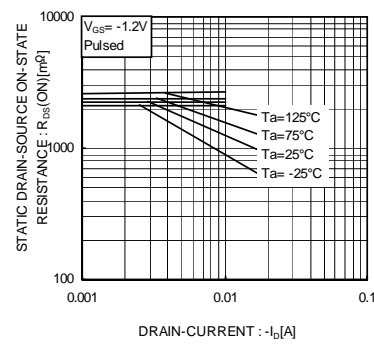


Fig.9 Static Drain-Source On-State Resistance vs. Drain Current( VI )

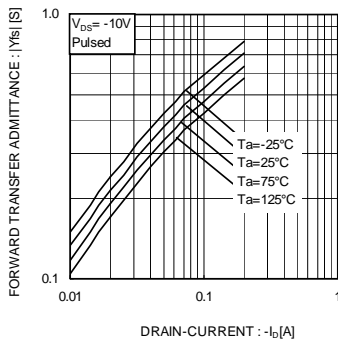


Fig.10 Forward Transfer Admittance vs. Drain Current

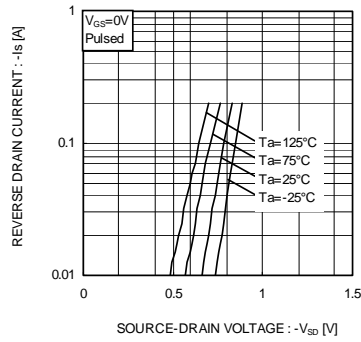


Fig.11 Reverse Drain Current vs. Source-Drain Voltage

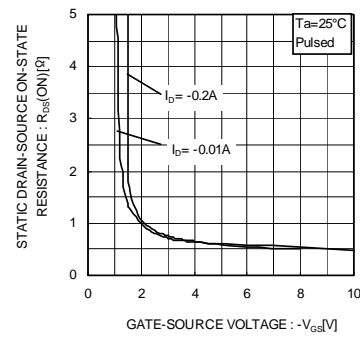


Fig.12 Static Drain-Source On-State Resistance vs. Gate Source Voltage

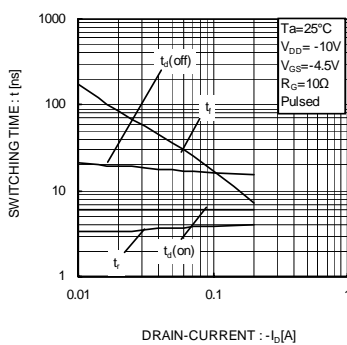


Fig.13 Switching Characteristics

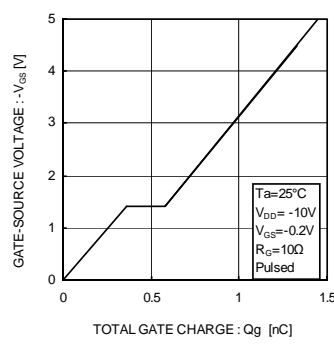


Fig.14 Dynamic Input Characteristics

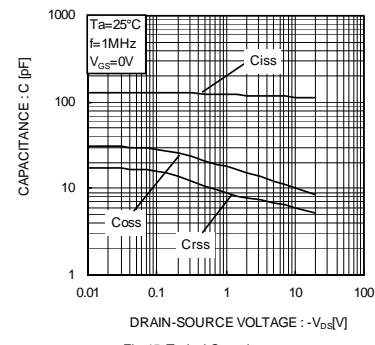


Fig.15 Typical Capacitance vs. Drain-Source Voltage

## ●Measurement circuit

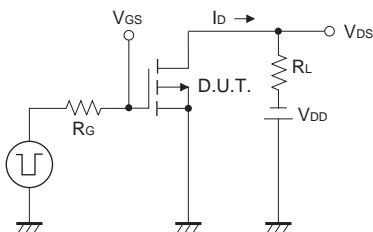


Fig.1-1 Switching Time Measurement Circuit

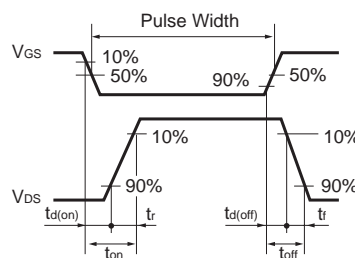


Fig.1-2 Switching Waveforms

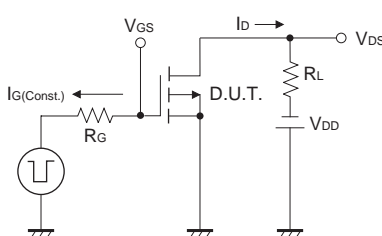


Fig.2-1 Gate Charge Measurement Circuit

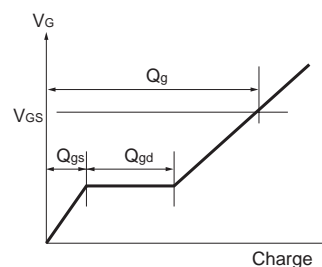


Fig.2-2 Gate Charge Waveform

## ●Notice

This product might cause chip aging and breakdown under the large electrified environment.

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