

4V Drive Pch MOSFET

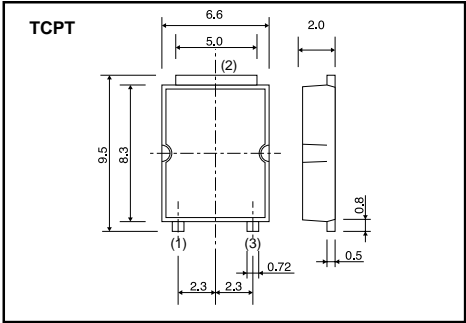
RSY160P05

●Structure
Silicon P-channel MOSFET

- Features
- 1) Low On-resistance.
 - 2) Built-in G-S Protection Diode.
 - 3) Same land pattern as CPT3 (D-PAK).

●Application
Switching

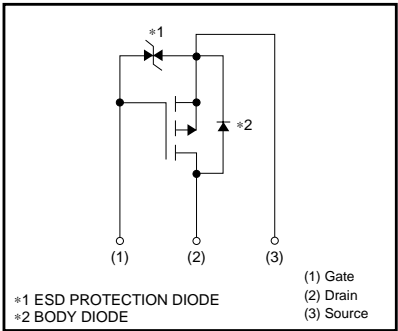
●Dimensions (Unit : mm)



●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	2500
RSY160P05		○

●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V _{DSS}	-45	V
Gate-source voltage		V _{GSS}	±20	V
Drain current	Continuous	I _D	±16	A
	Pulsed	I _{DP} *1	±32	A
Source current (Body diode)	Continuous	I _S	-16	A
	Pulsed	I _{SP} *1	-32	A
Total power dissipation		P _D *2	20	W
Channel temperature		T _{ch}	150	°C
Range of Storage temperature		T _{stg}	-55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%
*2 Tc=25°C

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	R _{th} (ch-c) *	6.25	°C / W

* Tc=25°C

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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	–	–	±10	μA	V _{GS} = ±20V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR) DSS}	–45	–	–	V	I _D = –1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	–	–	–1	μA	V _{DS} = –45V, V _{GS} =0V
Gate threshold voltage	V _{GS (th)}	–1.0	–	–2.5	V	V _{DS} = –10V, I _D = –1mA
Static drain-source on-state resistance	R _{DS (on)} *	–	35	50	mΩ	I _D = –16A, V _{GS} = –10V
		–	45	63	mΩ	I _D = –8A, V _{GS} = –4.5V
		–	50	70	mΩ	I _D = –8A, V _{GS} = –4.0V
Forward transfer admittance	Y _{fs} *	8.5	–	–	S	V _{DS} = –10V, I _D = –8A
Input capacitance	C _{iss}	–	2150	–	pF	V _{DS} = –10V
Output capacitance	C _{oss}	–	250	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{rss}	–	150	–	pF	f=1MHz
Turn-on delay time	t _{d (on)} *	–	13	–	ns	I _D = –10A
Rise time	t _r *	–	30	–	ns	V _{DD} = –25V
Turn-off delay time	t _{d (off)} *	–	90	–	ns	V _{GS} = –10V
Fall time	t _f *	–	105	–	ns	R _L =2.5Ω
Total gate charge	Q _g *	–	17.0	25.5	nC	V _{DD} = –25V I _D = –10A
Gate-source charge	Q _{gs} *	–	5.2	–	nC	V _{GS} = –5V
Gate-drain charge	Q _{gd} *	–	5.5	–	nC	R _L =2.5Ω R _G =10Ω

*Pulsed

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V _{SD} *	–	–	–1.2	V	I _S = –16A, V _{GS} =0V

*Pulsed

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●Electrical characteristic curves

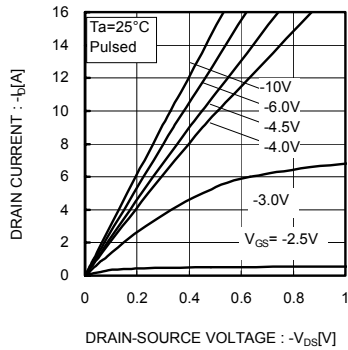


Fig.1 Typical Output Characteristics (I)

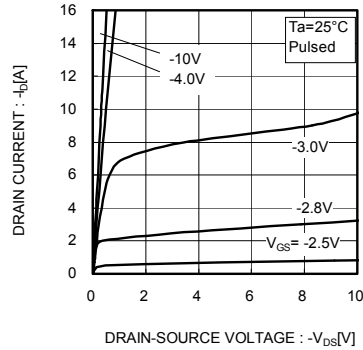


Fig.2 Typical Output Characteristics (II)

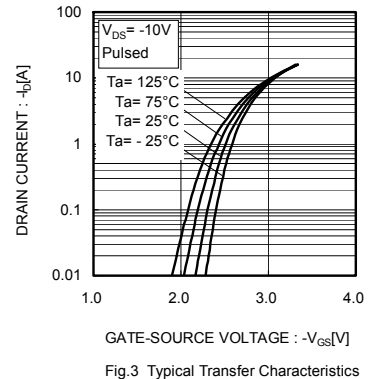


Fig.3 Typical Transfer Characteristics

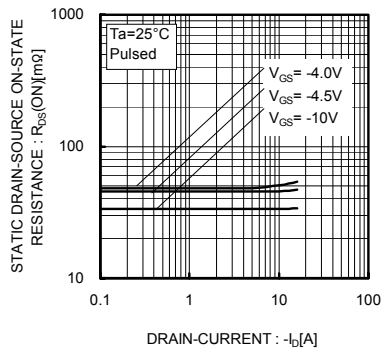


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (I)

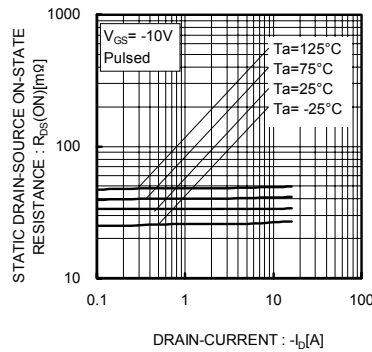


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (II)

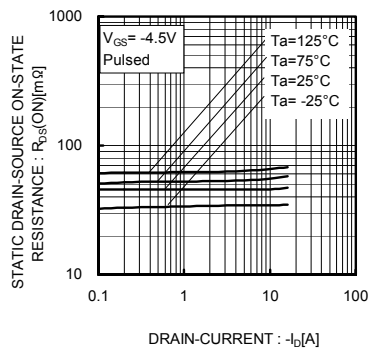


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current (III)

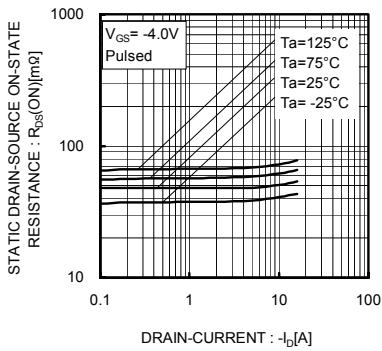


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current (IV)

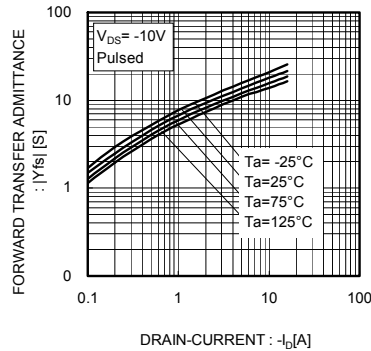


Fig.8 Forward Transfer Admittance vs. Drain Current

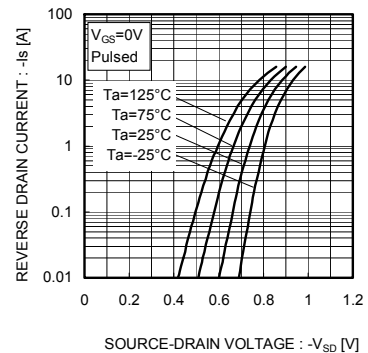


Fig.9 Reverse Drain Current vs. Source-Drain Voltage

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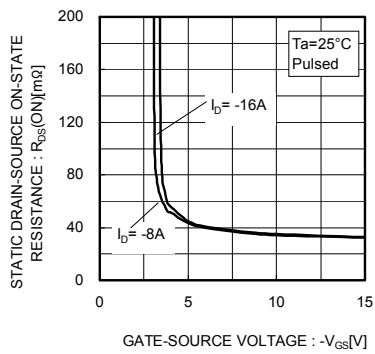


Fig.10 Static Drain-Source On-State Resistance vs. Gate Source

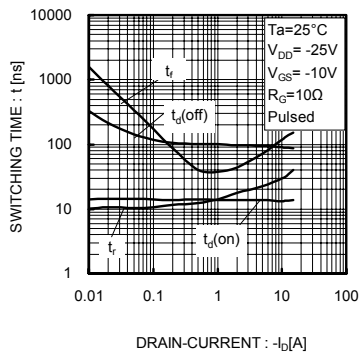


Fig.11 Switching Characteristics

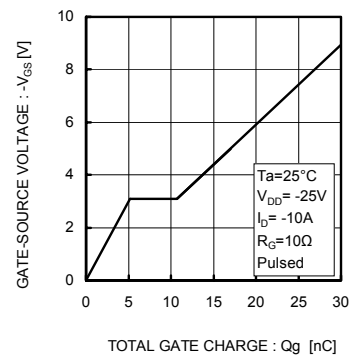


Fig.12 Dynamic Input Characteristics

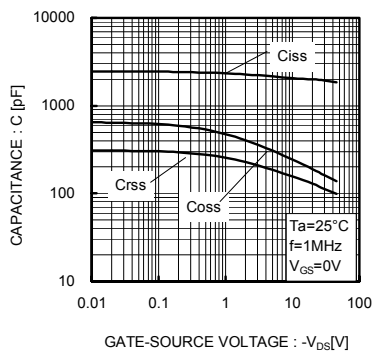


Fig.13 Typical Capacitance vs. Drain-Source Voltage

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●Measurement circuits

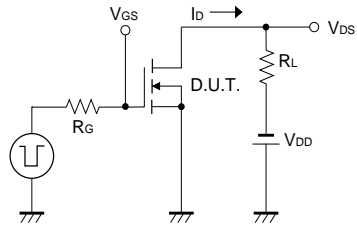


Fig.14 Switching Time Test Circuit

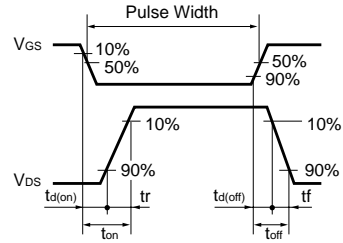


Fig.15 Switching Time Waveforms

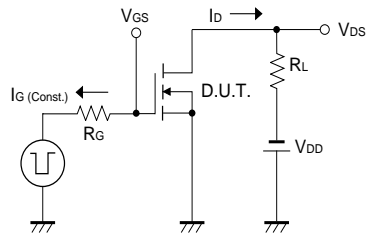


Fig.16 Gate Charge Test Circuit

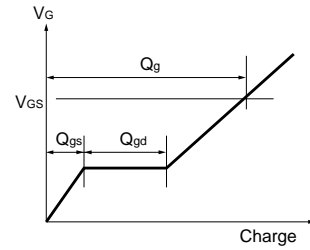


Fig.17 Gate Charge Waveform

Notes

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