Transistors

Switching (30V, 3.5A)

RDS035L03

● **Features**

1) Low Qg.

2) Low on-resistance.

3) Exellent resistance to damage from static electricity.
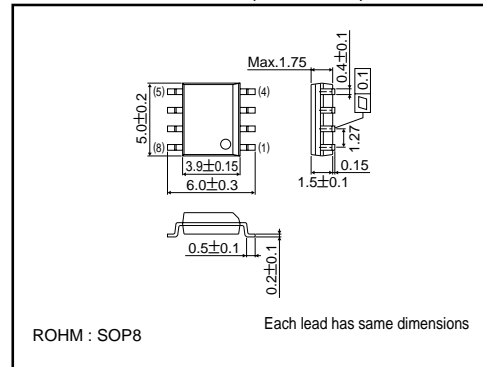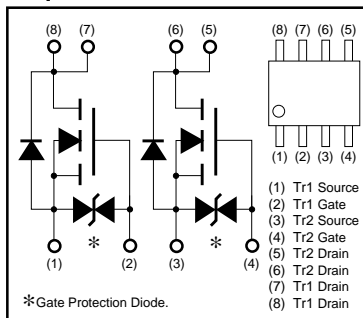
● **Application**

Switching

● **Structure**

Silicon N-channel

MOS FET

● **External dimensions** (Units : mm)

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Each lead has same dimensions

● **Equivalent circuit**

(1) Tr1 Source
(2) Tr1 Gate
(3) Tr2 Source
(4) Tr2 Gate
(5) Tr2 Drain
(6) Tr2 Drain
(7) Tr1 Drain
(8) Tr1 Drain

＊Gate Protection Diode.

＊ A protection diode is included between the gate and the source terminals to protect the diode against static electricity when the product is in use.Use a protection circuit when the fixed voltage are exceeded.

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

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous	I_D	3.5	A
	Pulsed	I_{DP}＊	14	A
Reverse Drain Current	Continuous	I_{DR}	3.5	A
	Pulsed	I_{DRP}＊	14	A
Source Current (Body Diode)	Continuous	I_S	1.3	A
	Pulsed	I_{SP}＊	5.2	A
Total Power Dissipation(Tc=25°C)		P_D	2	W
Channel Temperature		Tch	150	°C
Storage Temperature		Tstg	−55~+150	°C

＊ Pw≤10ms, Duty cycle≤1%

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● **Thermal resistance** (Ta=25°C)

Parameter	Symbol	Limits	Unit
Channel to Ambient	Rth(ch-A)	62.5	°C / W

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-Source Leakage	I_{GSS}	–	–	±10	μA	$V_{GS}=\pm20V$, $V_{DS}=0V$
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30	–	–	V	$I_D=1mA$, $V_{GS}=0V$
Zero Gate Voltage Drain Current	I_{DSS}	–	–	10	μA	$V_{DS}=30V$, $V_{GS}=0V$
Gate Threshold Voltage	$V_{GS(th)}$	1.0	–	2.5	V	$V_{DS}=10V$, $I_D=1mA$
Static Drain-Source On-State Resistance	$R_{DS(on)}$	–	62	80	mΩ	$I_D=3.5A$, $V_{GS}=10V$
		–	105	134		$I_D=3.5A$, $V_{GS}=4.5V$
		–	132	172		$I_D=3.5A$, $V_{GS}=4V$
Forward Transfer Admittance	$I Y_{fs} I^*$	2.5	–	–	S	$I_D=3.5A$, $V_{DS}=10V$
Input Capacitance	C_{iss}	–	180	–	pF	$V_{DS}=10V$
Output Capacitance	C_{oss}	–	95	–	pF	$V_{GS}=0V$
Reverse Transfer Capacitance	C_{rss}	–	38	–	pF	f=1MHz
Turn-On Delay Time	$t_{d(on)}^*$	–	6	–	ns	$I_D=2A$, $V_{DD}\fallingdotseq15V$
Rise Time	t_r^*	–	12	–	ns	$V_{GS}=10V$
Turn-Off Delay Time	$t_{d(off)}^*$	–	20	–	ns	$R_L=7.5\Omega$
Fall Time	t_f^*	–	6	–	ns	$R_{GS}=10\Omega$
Total Gate Charge	Q_g^*	–	6.5	–	nC	$V_{DD}=15V$
Gate-Source Charge	Q_{gs}^*	–	1.2	–	nC	$V_{GS}=10V$
Gate-Drain Charge	Q_{gd}^*	–	1.8	–	nC	$I_D=3.5A$

＊ Pulsed

● **Body diode characteristics (Source-Drain Characteristics)** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward Voltage	V_{SD}^*	–	–	1.5	V	$I_S=3.5A$, $V_{GS}=0V$
Reverse Recovery Time	t_{rr}^*	–	26	–	ns	$I_{DR}=3.5A$, $V_{GS}=0V$
Reverse Recovery Charge	Q_{rr}^*	–	24	–	nC	di/dt=50A/μs

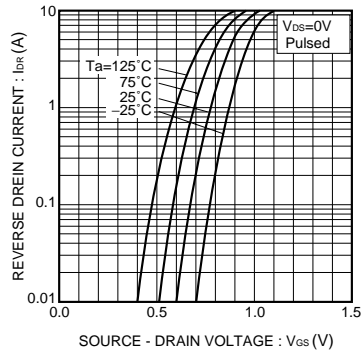＊ Pulsed

●**Electrical characteristic curves**

Fig.1 Reverse Drein Current
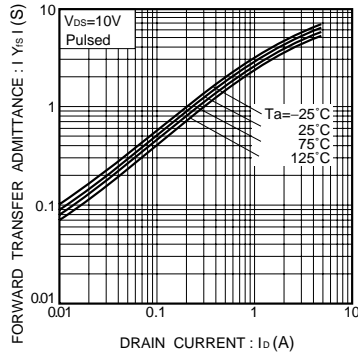vs. Source - Drain Voltage

Fig.2 Forward Transfer Admittance
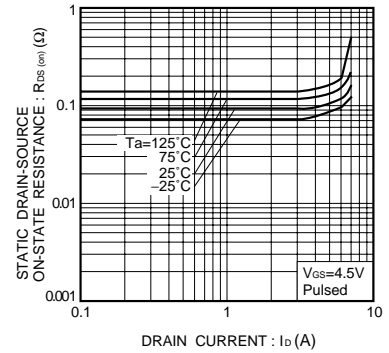vs. Drain Current

Fig.3 Static Drain-Source
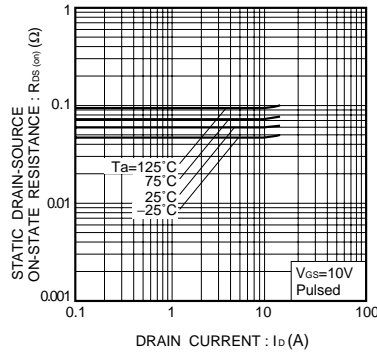On-State Resistance
vs. Drain Current (I)

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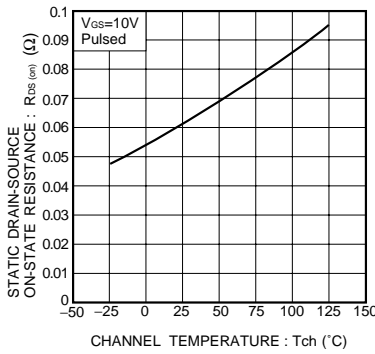On-State Resistance
vs. Drain Current (II)

Fig.5 Static Drain-Source
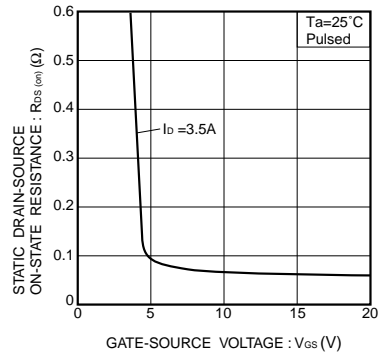On-State Resistance vs.
Channel Temperature

Fig.6 Static Drain-Source
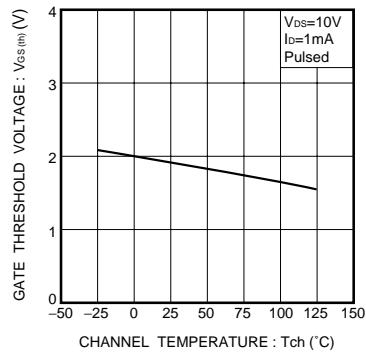On-State Resistance vs.
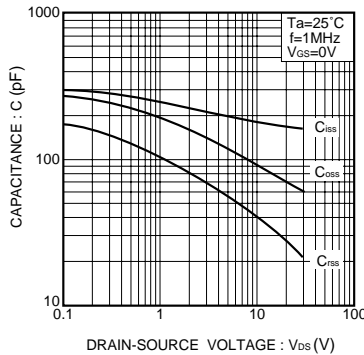Gate-Source Voltage

Fig.7 Gate Threshold Voltage
vs. Channel Temperature

Fig.8 Typical Capacitance
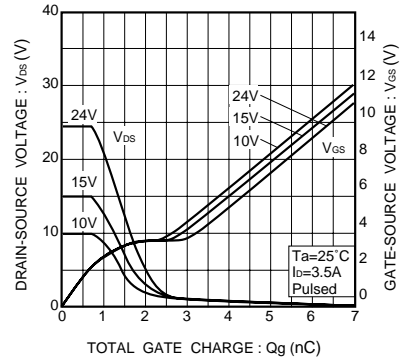vs. Drain-Source Voltage

Fig.9 Dynamic Input Characteristics
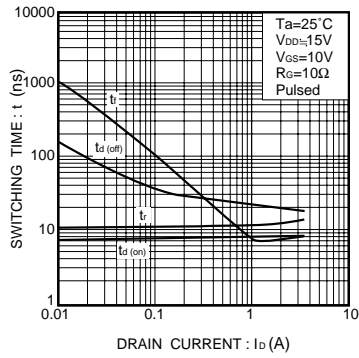
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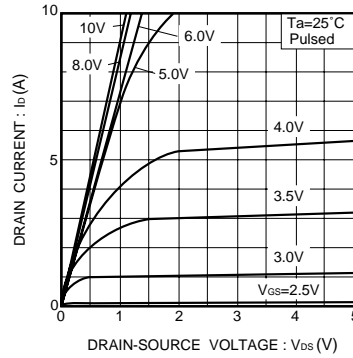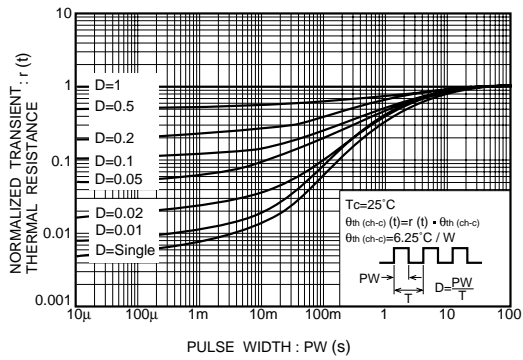Fig.10 Switching Characteristics

Fig.11 Typical Output Characteristics

Fig.12 Normalized Transient Thermal
Resistance vs. Pulse Width

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