

10V Drive Nch MOSFET

RCD075N20

Structure

Silicon N-channel MOSFET

Features

- 1) Low on-resistance.
- 2) High-speed switching.
- 3) Wide range of SOA.
- 4) Drive circuits can be simple.
- 5) Parallel use is easy.

Application

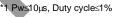
Switching

Packaging specifications

	• .	
	Package	Taping
Type	Code	TL
	Basic ordering unit (pieces)	2500
RCD075N2	0	

• Absolute maximum ratings (Ta = 25°C)

Paramete	Symbol	Limits	Unit	
Drain-source voltage	$V_{\rm DSS}$	200	V	
Gate-source voltage		V_{GSS}	±30	V
Drain current	Continuous	I _D *3	±7.5	Α
Diam current	Pulsed	I _{DP} *1	±30	Α
Source current	Continuous	l _s *3	7.5	Α
(Body Diode)	Pulsed	I _{SP} *1	30	Α
Avalanche current		I _{AS} *2	3.75	Α
Avalanche energy		E _{AS} *2	4.13	mJ
Power dissipation		P_D^{*4}	52	W
Channel temperature	Tch	150	°C	
Range of storage temper	erature	Tstg	-55 to +150	°C



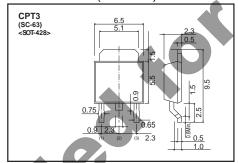
^{*2} L $\stackrel{\bullet}{=}$ 500 μ H, V_{DD} =50V, R_G =25 Ω , T_{ch} =25 $^{\circ}$ C

• Thermal resistance

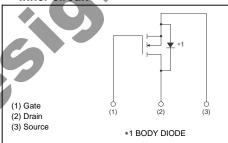
Parameter	Symbol	Limits	Unit
Channel to Case	Rth (j-c) *	2.36	°C/W

^{*} T_C=25°C

• Dimensions (Unit : mm)



Inner circuit



^{*3} Limited only by maximum channel temperature allowed.

^{*4} T_C=25°C

^{*} Limited only by maximum channel temperature allowed.

• Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	-	-	±100	nΑ	$V_{GS}=\pm30V$, $V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	200	-	-	V	I _D =1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}		-	10	μA	V _{DS} =200V, V _{GS} =0V
Gate threshold voltage	V _{GS (th)}	3.25	-	5.25	V	V _{DS} =10V, I _D =1mA
Static drain-source on-state resistance	R _{DS (on)} *	-	250	325	mΩ	I _D =3.75A, V _{GS} =10V
Forward transfer admittance	IY _{fs} I*	1.5	3.0	-	S	V _{DS} =10V, I _D =3.75A
Input capacitance	C _{iss}		755	-	pF	V _{DS} =25V
Output capacitance	C _{oss}	1	55	-	рF	V _{GS} =0V
Reverse transfer capacitance	C_{rss}	1	25	-	pF	f=1MHz
Turn-on delay time	t _{d(on)} *	1	20	-	ns	V _{DD} ≒100V, I _D =3.75A
Rise time	t _r *	1	22	-	ns	V _{GS} =10V
Turn-off delay time	t _{d(off)} *		24	-	ns	$R_L = 26.67\Omega$
Fall time	t _f *	-	12	-	ns	$R_G=10\Omega$
Total gate charge	Q _g *	-	15	-	nC	V _{DD} ≒100V, I _D =7.5A
Gate-source charge	Q _{gs} *	-	6	-	nC	V _{GS} =10V
Gate-drain charge	Q _{gd} *	-	6	-	nC	

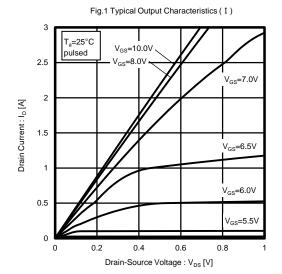
^{*}Pulsed

●Body diode characteristics (Source-Drain)

Forward Voltage *Pulsed	V _{SD} *	-	1.5	V	_s =7.5A, V _{GS} =0V
*Pulsed					=1.5H, V _{GS} =UV
	OC C		O	<i>"</i>	



●Electrical characteristic curves (Ta=25°C)



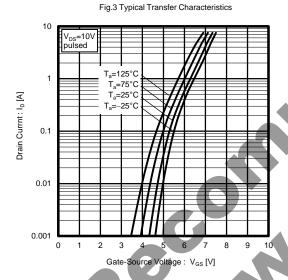


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

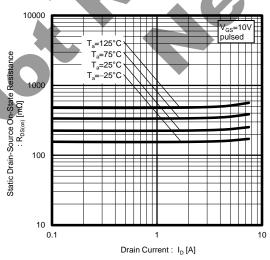


Fig.2 Typical Output Characteristics (II)

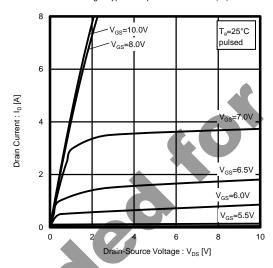


Fig.4 Gate Threshold Voltage vs. Channel Temperature

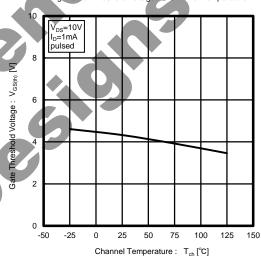
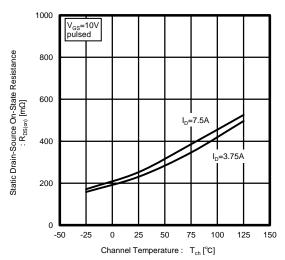


Fig.6 Static Drain-Source On-State Resistance vs. Channel Temperature



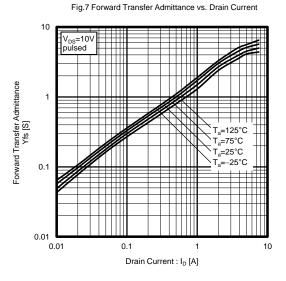


Fig.8 Source Current vs. Source-Drain Voltage

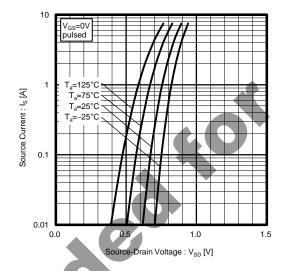


Fig.9 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

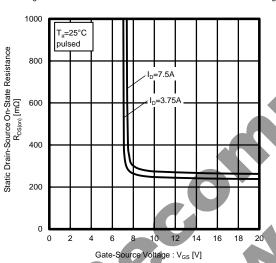


Fig.10 Switching Characteristics

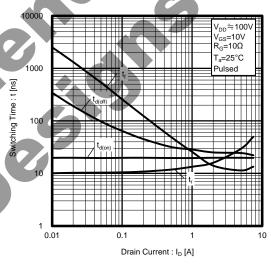


Fig.11 Dynamic Input Characteristics

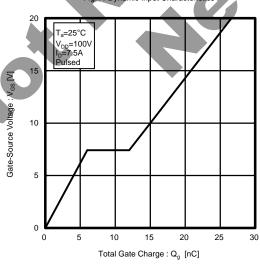
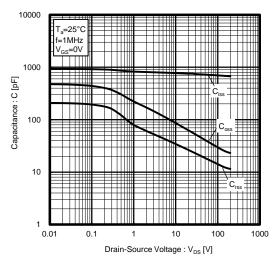


Fig.12 Typical Capacitance vs. Drain-Source Voltage



Measurement circuits

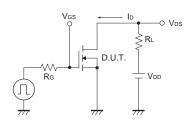


Fig.1-1 Switching Time Measurement Circuit

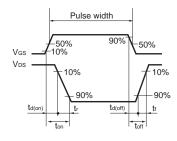


Fig.1-2 Switching Waveforms

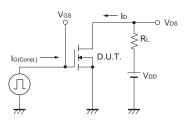


Fig.2-1 Gate Charge Measurement Circuit

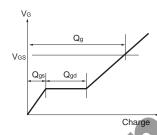


Fig.2-2 Gate Charge Waveform

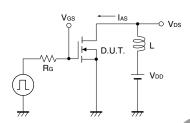


Fig.3-1 Avalanche Measurement Circuit

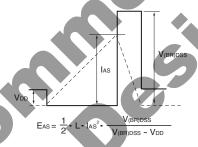


Fig.3-2 Avalanche Waveform

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CLASSⅢ	CLACCIII	CLASS II b	CL ACCIT
CLASSIV	CLASSⅢ	CLASSⅢ	CLASSII

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 - [c] the Products are exposed to direct sunshine or condensation
 - [d] the Products are exposed to high Electrostatic
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