Complementary MOSFET
RC6602

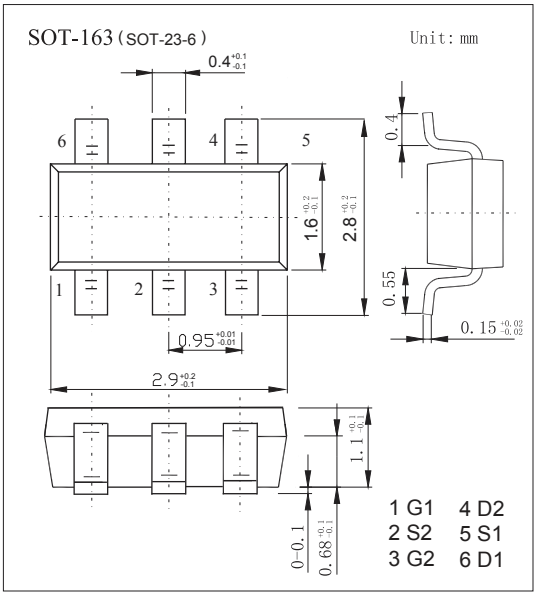
■ Features

N-Channel :

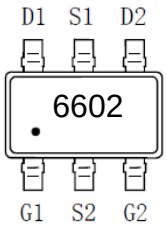
- $V_{DS\,(V)}$ = 30V
- I_D = 4.2 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 39mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 56mΩ (V_{GS} = 4.5V)

P-Channel :

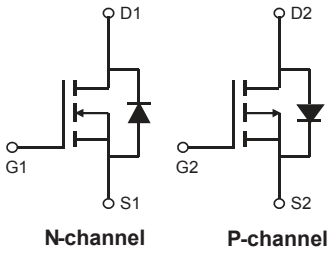
- $V_{DS\,(V)}$ = -30V
- I_D = -3.5 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 79mΩ (V_{GS} = -10V)
- $R_{DS(ON)}$ < 110mΩ (V_{GS} = -4.5V)



■ MARKING



6602=Device code
Solid point=Pin1 positioning point



■ Maximum Ratings (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Value		Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current(1)	I_D	4.2	-3.5	A
Pulsed Drain Current (2)	I_{DM}	16	-12	A
Power Dissipation	P_D	1.1	1	W
Thermal Resistance from Junction to Ambient(1)	$R_{\theta JA}$	140	140	℃/W
Operation Junction and Storage Temperature Range	T_J,T_{stg}	-55~+150	-55~+150	℃

1.The value of $R_{\theta JA}$ is measured with the device one-side active only, mounted on 1 in^2 FR-4 board with 2oz. single-sided Copper, in a still air environment with TA =25°C.

2.Repetitive rating,pulse with limited by junction temperature.

Complementary MOSFET
RC6602

■ MOSFET ELECTRICAL CHARACTERISTICS

N-channel MOSFET Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =24V,V_{GS} = 0V			1	μA
Gate-source leakage current (note1)	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Drain-source on-resistance (note1)	$R_{DS(on)}$	V_{GS} =10V, I_D =3A		32	39	mΩ
		V_{GS} =4.5V, I_D =3A		43	56	mΩ
Forward tranconductance (note1)	g_{FS}	V_{DS} =5V, I_D =3A	3			S
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.8	3.0	V
Diode forward voltage (note1)	V_{SD}	I_S=1A,V_{GS}=0V			1	V
Dynamic characteristics (note2)						
Input capacitance	C_{iss}	V_{GS} =0V,V_{DS} =15V ,f =1MHz		302		pF
Output capacitance	C_{oss}			39		pF
Reverse transfer capacitance	C_{rss}			28		pF
Gate resistance	R_g	V_{GS} =0V,V_{DS} =0V,f =1MHz		6		Ω
Switching Characteristics(note2)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=10V,V_{DD}=15V, R_L=5Ω,R_{GEN}=6Ω		0.8		ns
Turn-on rise time	t_r			2		ns
Turn-off delay time	$t_{d(off)}$			6.8		ns
Turn-off fall time	t_f			3		ns
Total gate charge	Q_g	V_{GS}=6V, V_{DD}=10V, I_D=2A		4.3		nC
Gate-source charge	Q_{gs}			1.1		nC
Gate-drain charge	Q_{gd}			1.3		nC

Notes : 1. Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.

2. Guaranteed by design, not subject to production testing.

Complementary MOSFET
RC6602

■ MOSFET ELECTRICAL CHARACTERISTICS

P-channel MOSFET Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	V_{GS} = 0V, I_D =-250μA	-30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-24V,V_{GS} = 0V			-1	μA
Gate-source leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Drain-source on-resistance (note1)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-2.3A		64	79	mΩ
		V_{GS} =-4.5V, I_D =-2A		95	110	mΩ
Forward tranconductance (note1)	g_{FS}	V_{DS} =-5V, I_D =-2.3A	3			S
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0	-1.6	-3.0	V
Diode forward voltage (note1)	V_{DS}	I_S=-1A,V_{GS}=0V			-1	V
Dynamic characteristics (note2)						
Input capacitance	C_{iss}	V_{GS} =0V,V_{DS} =-15V,f =1MHz		291		pF
Output capacitance	C_{oss}			44		pF
Reverse transfer capacitance	C_{rss}			37		pF
Gate resistance	R_g	V_{GS} =0V,V_{DS} =0V,f =1MHz		10		Ω
Switching Characteristics (note2)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=-10V,V_{DD}=-15V, R_L=6Ω,R_{GEN}=6Ω		13		ns
Turn-on rise time	t_r			10		ns
Turn-off delay time	$t_{d(off)}$			28		ns
Turn-off fall time	t_f			13		ns
Total gate charge	Q_g	V_{GS}=-6V, V_{DD}=-10V, I_D=-2A		4.5		nC
Gate-source charge	Q_{gs}			1		nC
Gate-drain charge	Q_{gd}			1.4		nC

Notes : 1. Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.

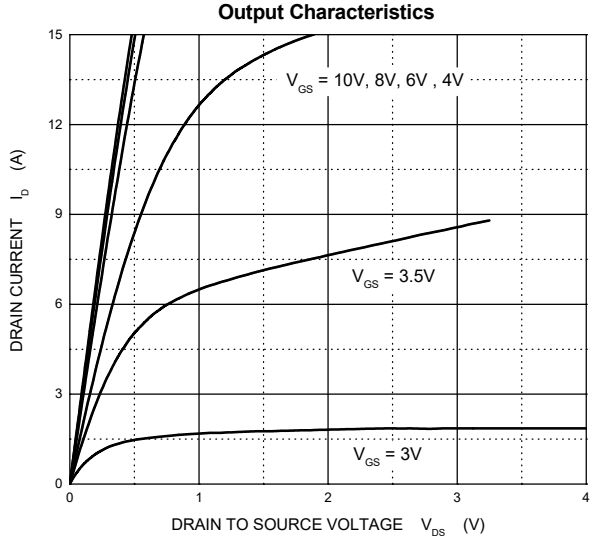
2. Guaranteed by design, not subject to production testing.

Complementary MOSFET
RC6602

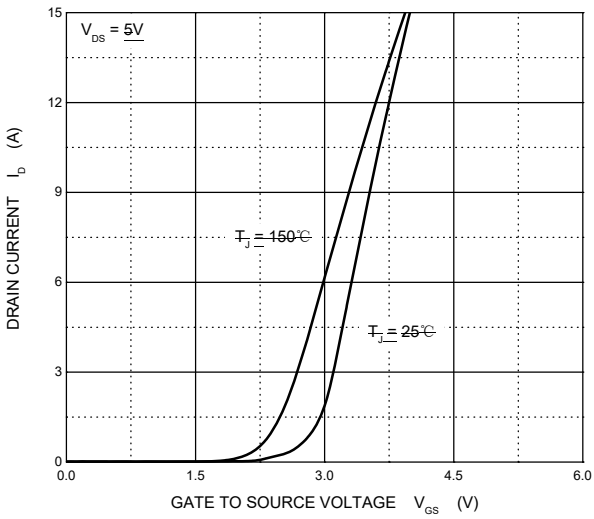
■ Typical Characteristics

N-Channel-MOS

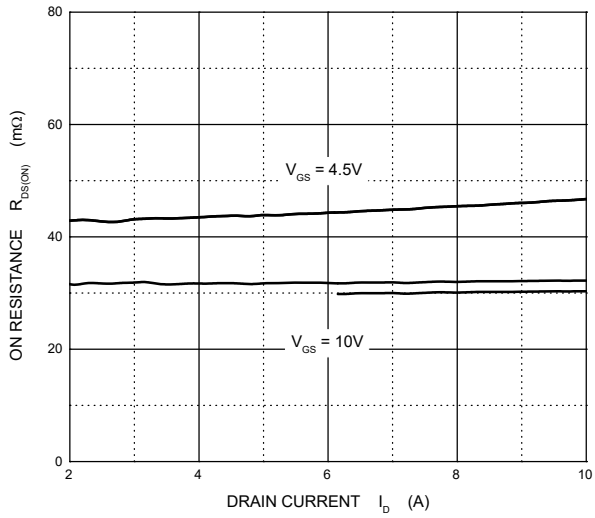
Output Characteristics



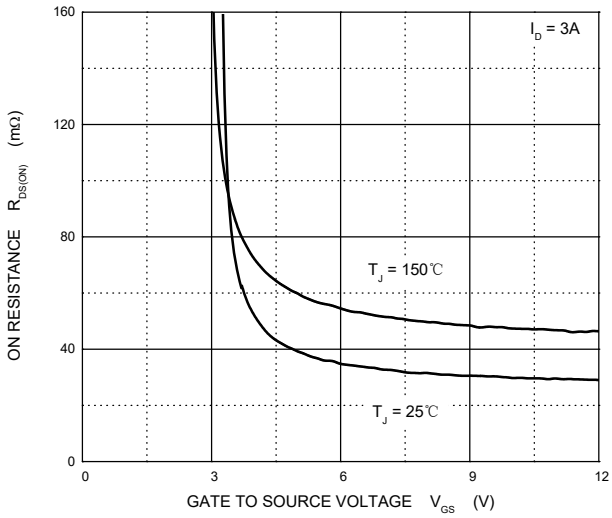
Transfer Characteristics



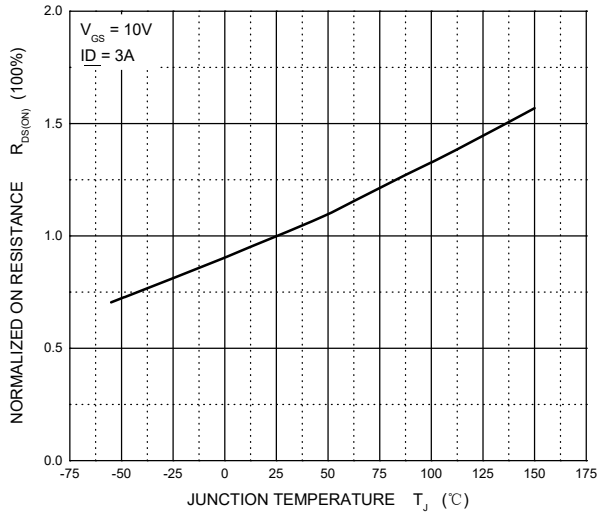
On Resistance vs. Drain Current



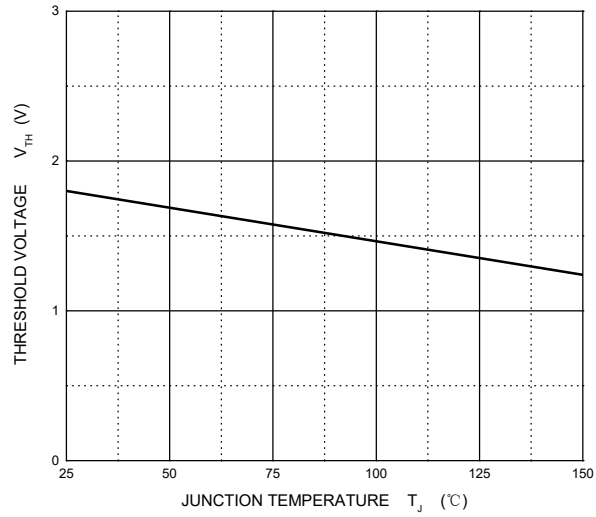
On Resistance vs. Gate-Source Bias



On Resistance vs. Junction Temperature



Gate-Source Threshold Voltage

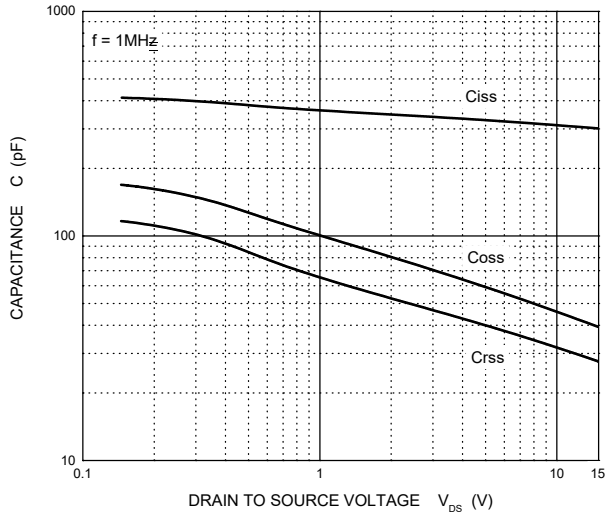


Complementary MOSFET
RC6602

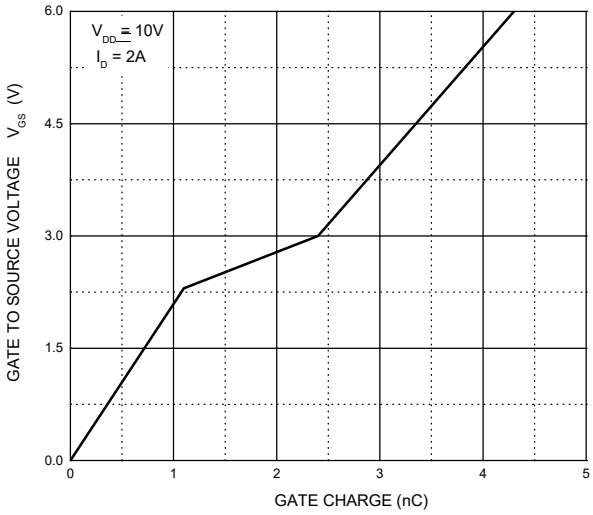
■ Typical Characteristics

N-Channel-MOS

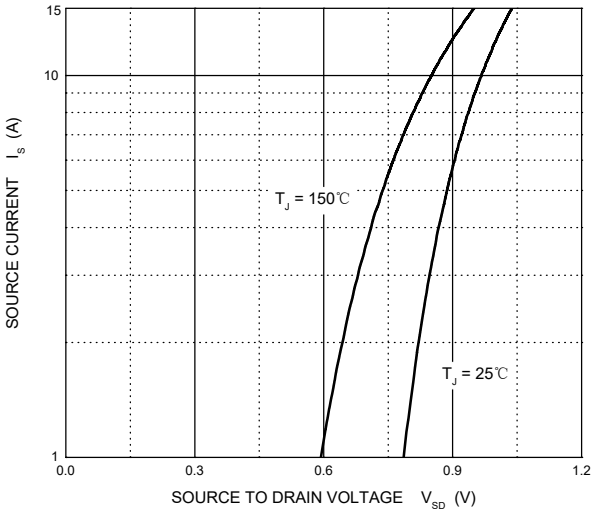
Typical Capacitances



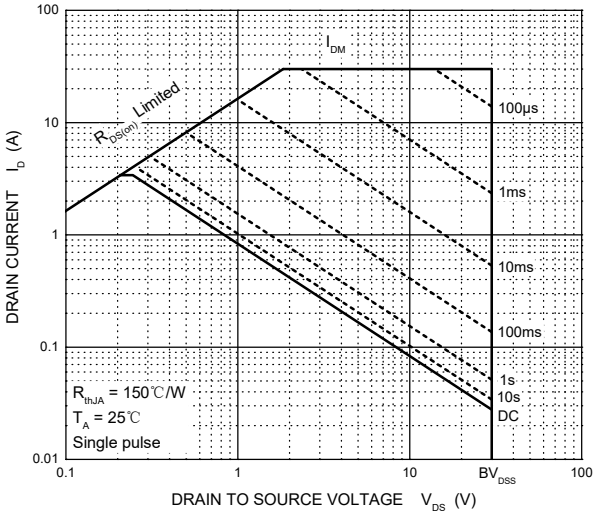
Gate Charge



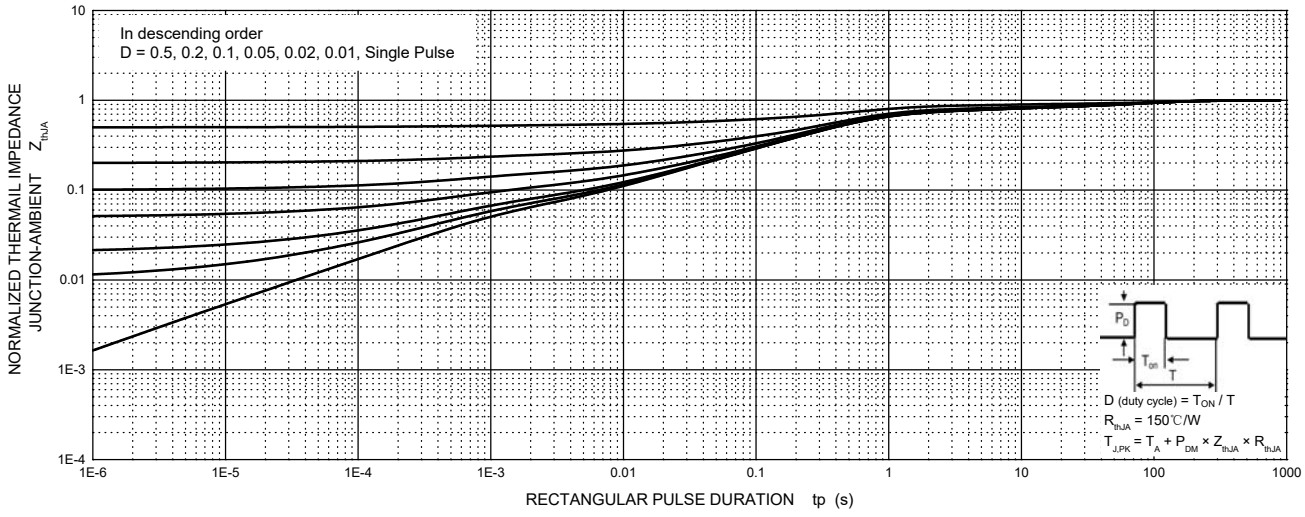
Source-Drain Diode Forward Characteristics



Maximum Safe Operating Area



Transient Thermal Impedance, Junction-Case

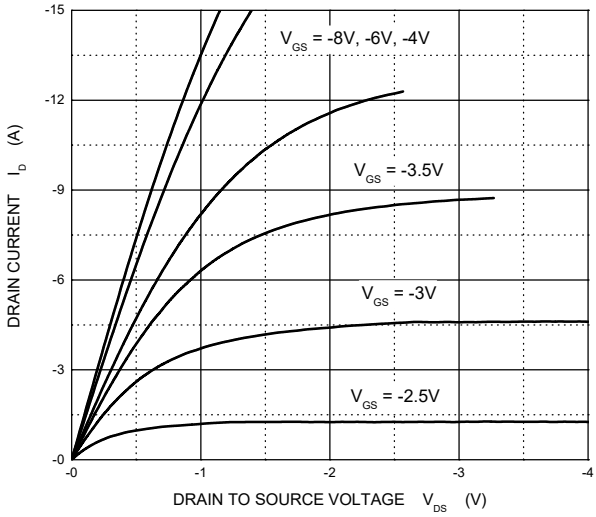


Complementary MOSFET
RC6602

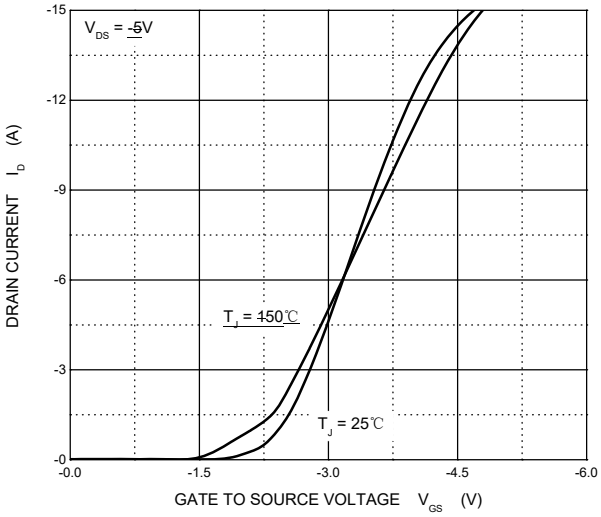
■ Typical Characteristics

P-Channel-MOS

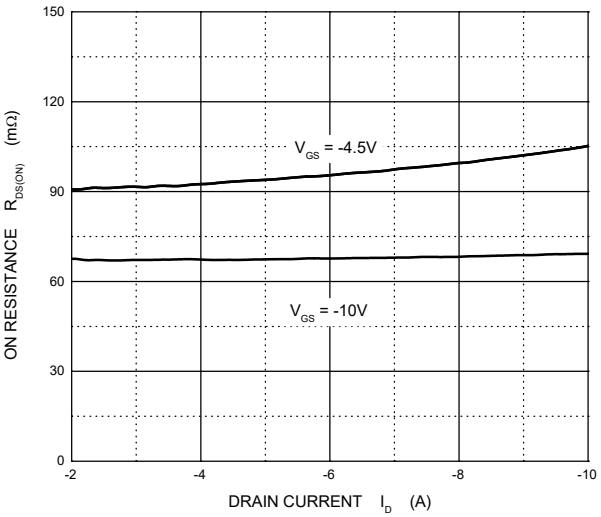
Output Characteristics



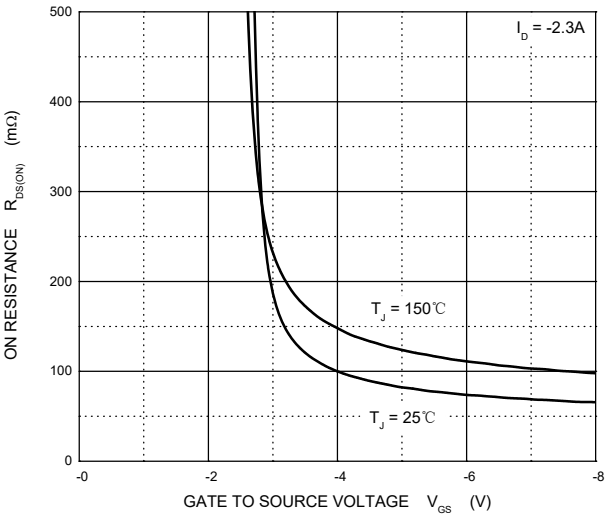
Transfer Characteristics



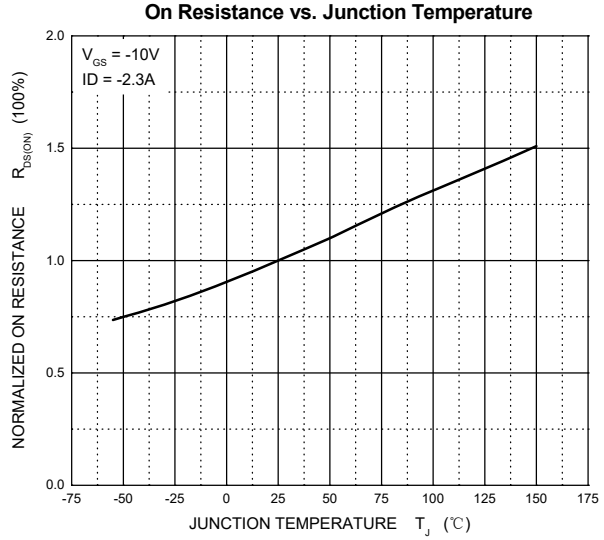
On Resistance vs. Drain Current



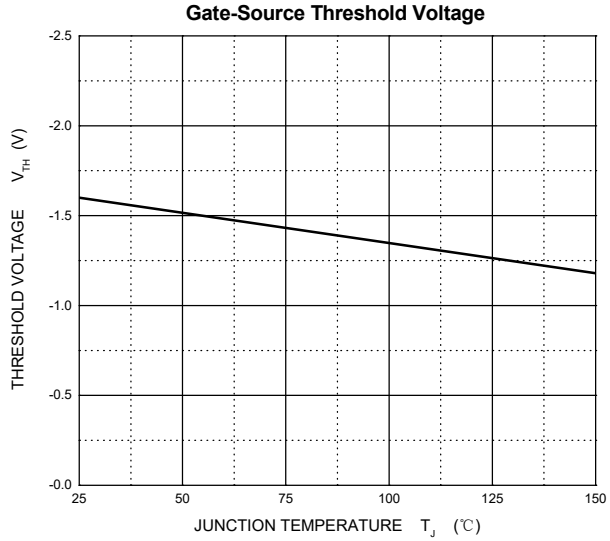
On Resistance vs. Gate-Source Bias



On Resistance vs. Junction Temperature



Gate-Source Threshold Voltage

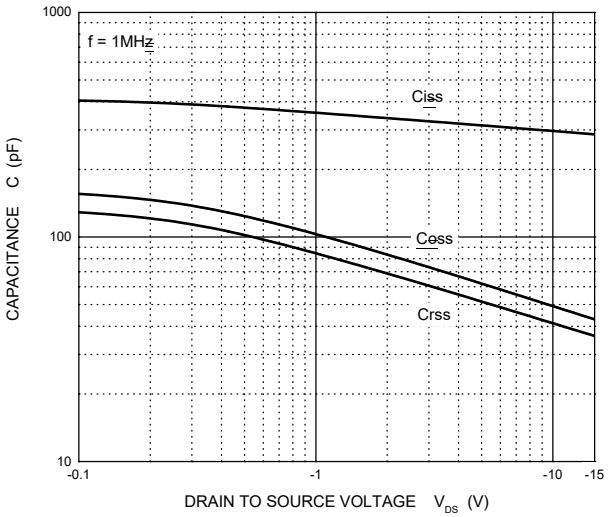


Complementary MOSFET
RC6602

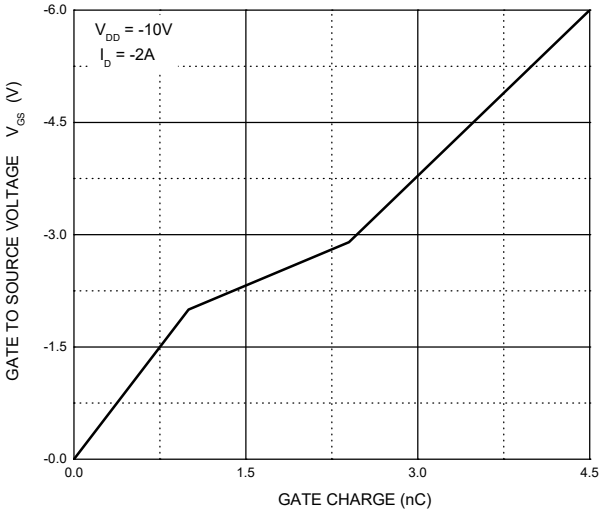
■ Typical Characteristics

P-Channel-MOS

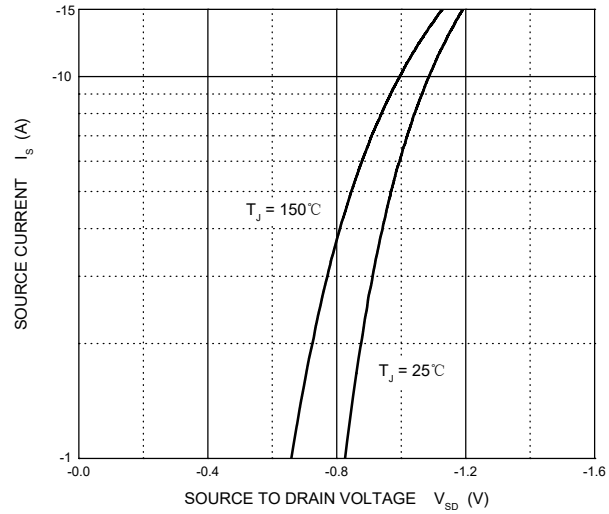
Typical Capacitances



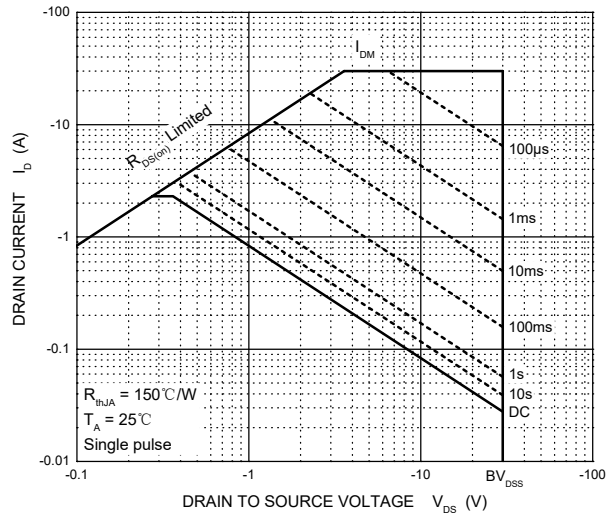
Gate Charge



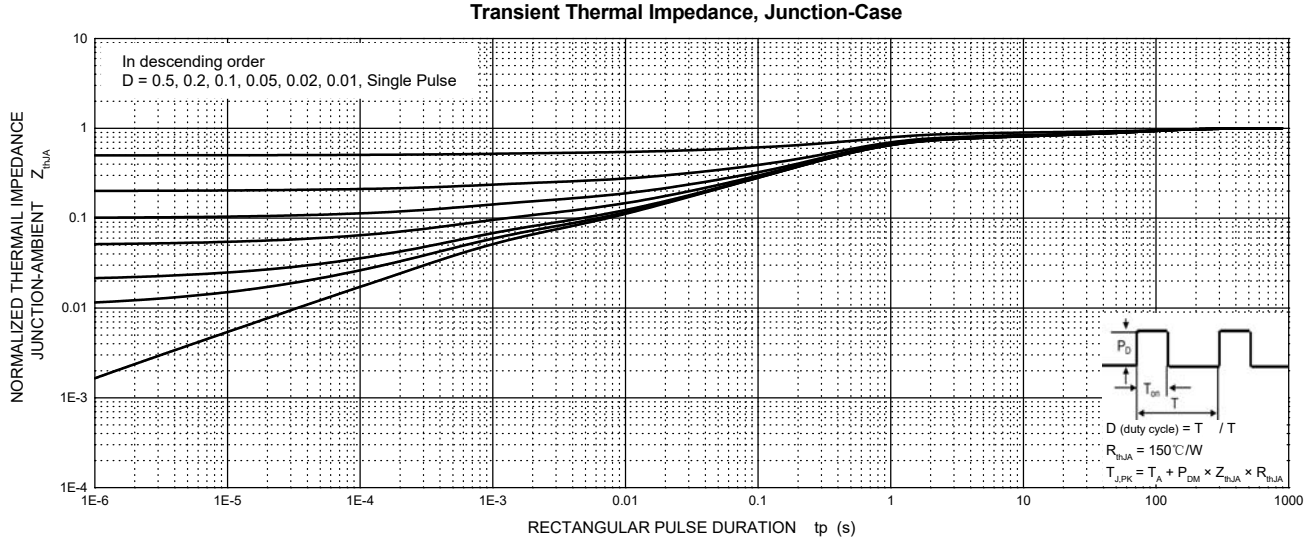
Source-Drain Diode Forward Characteristics



Maximum Safe Operating Area



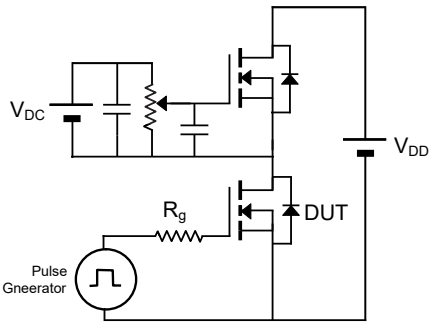
Transient Thermal Impedance, Junction-Case

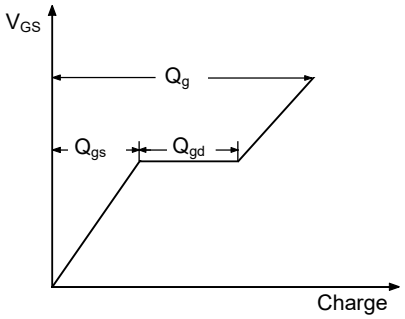


Complementary MOSFET
RC6602

■ TEST CIRCUIT AND WAVEFOMRS

Gate Charge





Resistive Load Switching Time