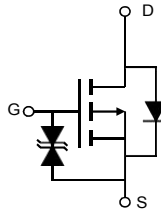
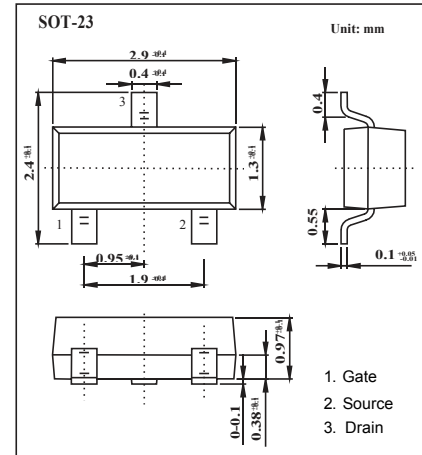


## P-Channel MOSFET

### RC3415P

**■ Features**

- $V_{DS} (V) = -20V$
- $I_D = -4A (V_{GS} = -4.5V)$
- $R_{DS(ON)} < 40m\Omega (V_{GS} = -4.5V)$
- $R_{DS(ON)} < 60m\Omega (V_{GS} = -2.5V)$
- $R_{DS(ON)} < 100m\Omega (V_{GS} = -1.8V)$
- ESD Rating: 2000V HBM


**■ Absolute Maximum Ratings  $T_a = 25^\circ C$** 

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	-20	V	
Gate-Source Voltage	$V_{GS}$	$\pm 10$		
Continuous Drain Current	$I_D$	$T_a = 25^\circ C$	-4	A
		$T_a = 70^\circ C$	-3.5	
Pulsed Drain Current	$I_{DM}$	-30		
Power Dissipation (Note.1)	$P_D$	$T_a = 25^\circ C$	1.5	W
		$T_a = 70^\circ C$	1	
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	$t \leq 10s$	80	$^\circ C/W$
		Steady-State	100	
Thermal Resistance.Junction- to-Lead	$R_{thJL}$	52		
Junction Temperature	$T_J$	150	$^\circ C$	
Junction Storage Temperature Range	$T_{stg}$	-55 to 150		

Note.1: The power dissipation  $P_D$  is based on  $T_{J(MAX)}=150^\circ C$ , using  $\leq 10s$  junction-to-ambient thermal resistance.

## P-Channel MOSFET

### RC3415P

**■ Electrical Characteristics Ta = 25°C**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =-250 μA, V <sub>GS</sub> =0V	-20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	μA
		V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C			-5	
Gate-Body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±10V			±10	μA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250 μA	-0.5		-1.0	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4A			40	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4A T <sub>J</sub> =125°C			62	
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-4A			60	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-2A			100	
On state drain current	I <sub>D(ON)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-5V	-30			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-4A		20		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-10V, f=1MHz		1450		pF
Output Capacitance	C <sub>oss</sub>			205		
Reverse Transfer Capacitance	C <sub>rss</sub>			160		
Gate resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		6.5		Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-4A		17.2		nC
Gate Source Charge	Q <sub>gs</sub>			1.3		
Gate Drain Charge	Q <sub>gd</sub>			4.5		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, R <sub>L</sub> =2.5 Ω, R <sub>GEN</sub> =3 Ω		9.5		ns
Turn-On Rise Time	t <sub>r</sub>			17		
Turn-Off DelayTime	t <sub>d(off)</sub>			94		
Turn-Off Fall Time	t <sub>f</sub>			35		
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =-4A, di/dt=100A/μs		31		nC
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			13.8		
Maximum Body-Diode Continuous Current	I <sub>S</sub>				-2.2	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1A, V <sub>GS</sub> =0V		-0.78	-1	V

**■ Marking**

Marking	3415T.
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## P-Channel MOSFET RC3415P

■ Typical Characteristics

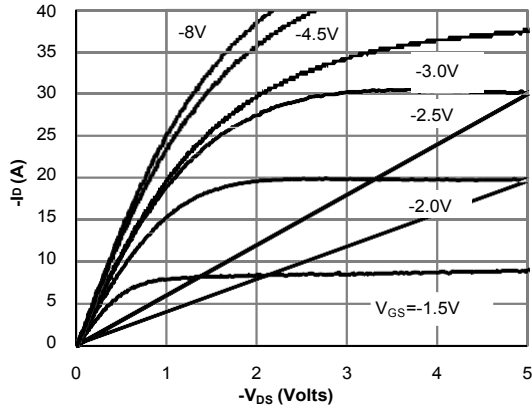


Fig 1: On-Region Characteristics

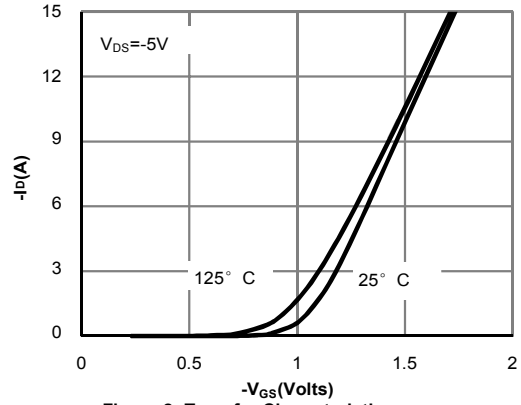


Figure 2: Transfer Characteristics

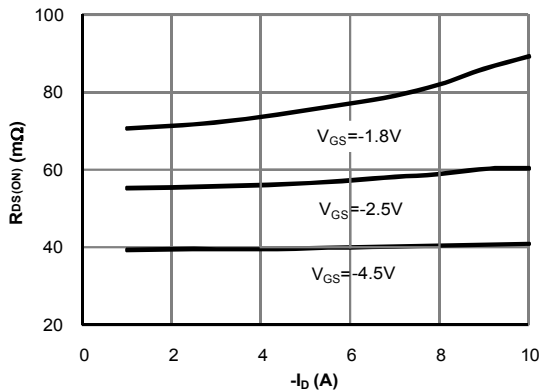


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

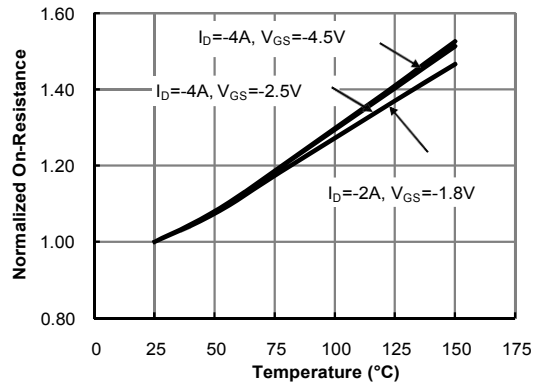


Figure 4: On-Resistance vs. Junction Temperature

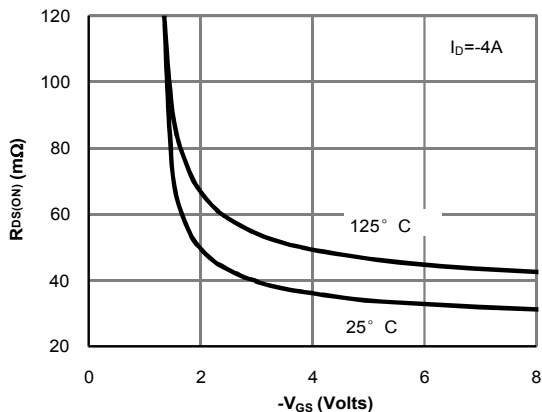


Figure 5: On-Resistance vs. Gate-Source Voltage

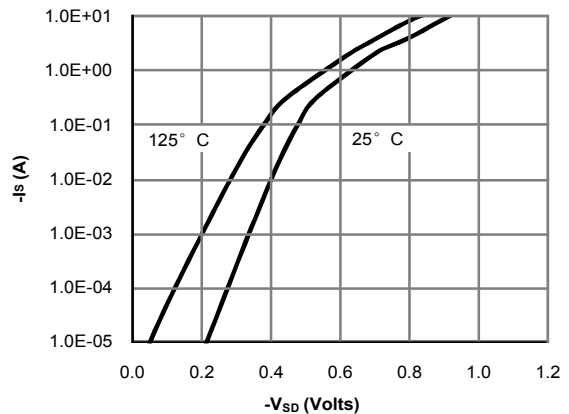
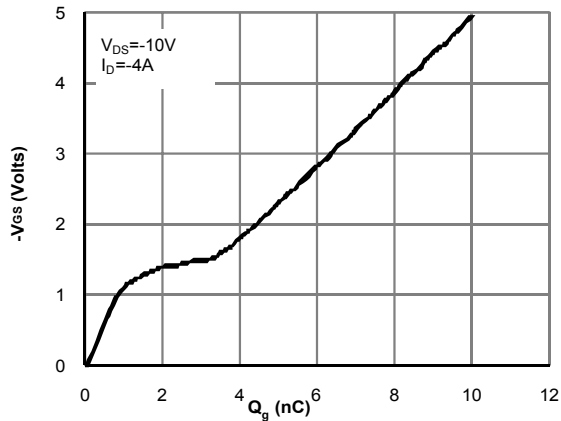
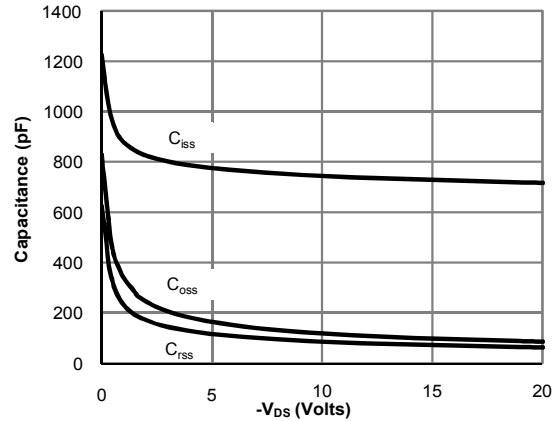
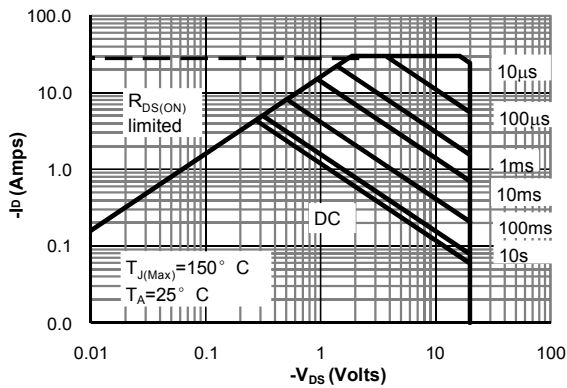
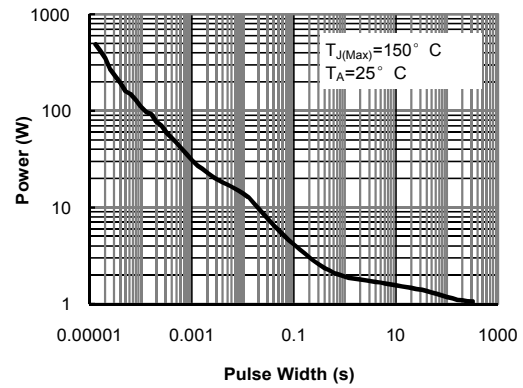
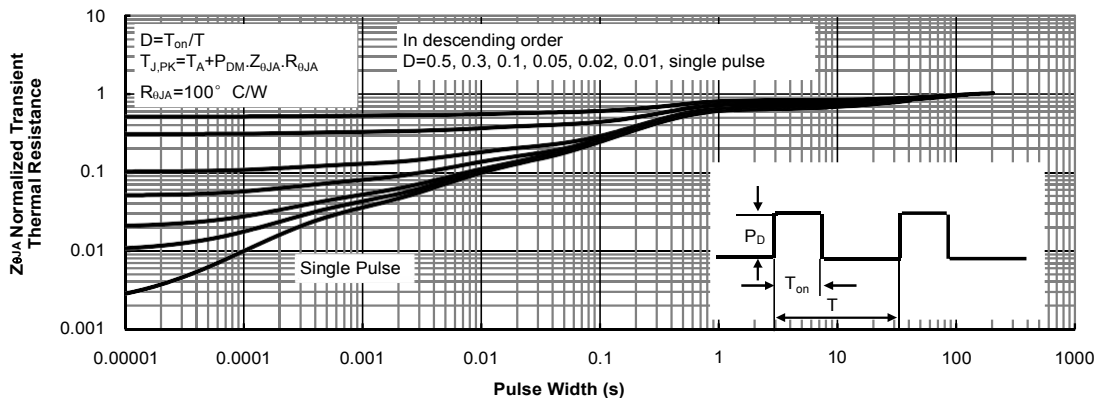


Figure 6: Body-Diode Characteristics

## P-Channel MOSFET

### RC3415P

**■ Typical Characteristics**

**Figure 7: Gate-Charge Characteristics**

**Figure 8: Capacitance Characteristics**

**Figure 9: Maximum Forward Biased Safe Operating Area**

**Figure 10: Single Pulse Power Rating Junction-to-Ambient**

**Figure 11: Normalized Maximum Transient Thermal Impedance**