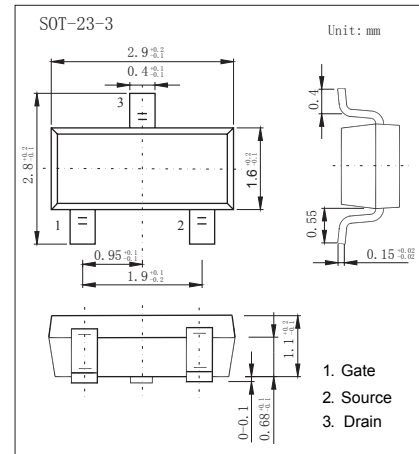
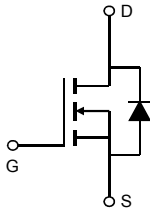


## N-Channel MOSFET RC3420

### ■ Features

- $V_{DS} (V) = 20V$
- $I_D = 6 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 24m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 27m\Omega (V_{GS} = 4.5V)$
- $R_{DS(ON)} < 42m\Omega (V_{GS} = 2.5V)$
- $R_{DS(ON)} < 55m\Omega (V_{GS} = 1.8V)$



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		$V_{DS}$	20	V
Gate-Source Voltage		$V_{GS}$	$\pm 12$	
Continuous Drain Current	$T_A=25^\circ C$	$I_D$	6	A
	$T_A=70^\circ C$		5	
Pulsed Drain Current		$I_{DM}$	30	
Power Dissipation	$T_A=25^\circ C$	$P_D$	1.4	W
	$T_A=70^\circ C$		0.9	
Thermal Resistance.Junction- to-Ambient	$t \leq 10s$	$R_{thJA}$	90	$^\circ C/W$
	Steady-State		125	
Thermal Resistance.Junction- to-Lead		$R_{thJL}$	80	
Junction Temperature		$T_J$	150	$^\circ C$
Storage Temperature Range		$T_{stg}$	-55 to 150	

## N-Channel MOSFET RC3420

■ 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> =±12V			±100	nA	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	0.4		1.1	V	
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =6A			24	mΩ	
		V <sub>GS</sub> =10V, I <sub>D</sub> =6A, T <sub>J</sub> =125°C			35		
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A			27		
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =4A			42		
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =2A			55		
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =6A		25		S	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =10V, f=1MHz	420		630	pF	
Output Capacitance	C <sub>oss</sub>		65		125		
Reverse Transfer Capacitance	C <sub>rss</sub>		45		105		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	0.8		2.6	Ω	
Total Gate Charge (10V)	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =10V, I <sub>D</sub> =6A		12.5		nC	
Total Gate Charge (4.5V)				6			
Gate Source Charge			Q <sub>gs</sub>		1		
Gate Drain Charge			Q <sub>gd</sub>		2		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =10V, R <sub>L</sub> =1.7Ω, R <sub>G</sub> =3Ω		3		ns	
Turn-On Rise Time	t <sub>r</sub>			7.5			
Turn-Off DelayTime	t <sub>d(off)</sub>			20			
Turn-Off Fall Time	t <sub>f</sub>			6			
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =6A, di/dt=100A/us		14		nC	
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			6			
Maximum Body-Diode Continuous Current	I <sub>S</sub>				2	A	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V			1	V	

\* The static characteristics in Figures 1 to 6 are obtained using <300us pulses, duty cycle 0.5% max.

■ Marking

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# N-Channel MOSFET RC3420

## ■ Typical Characteristics

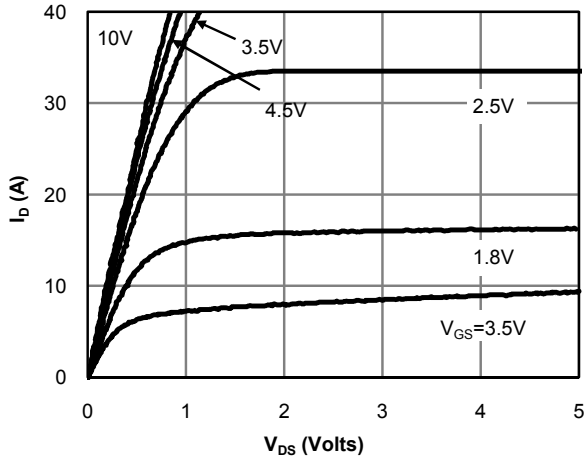


Fig 1: On-Region Characteristics (Note E)

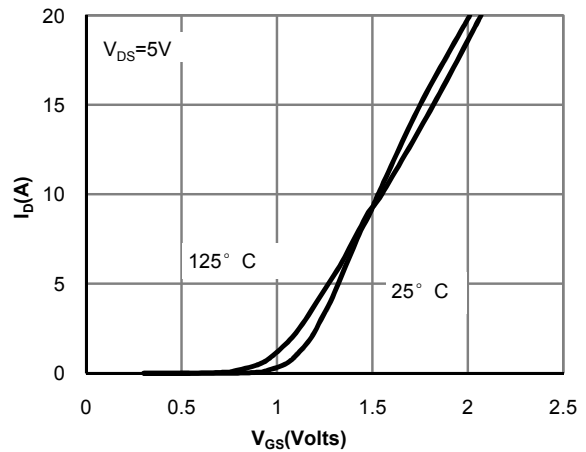


Figure 2: Transfer Characteristics (Note E)

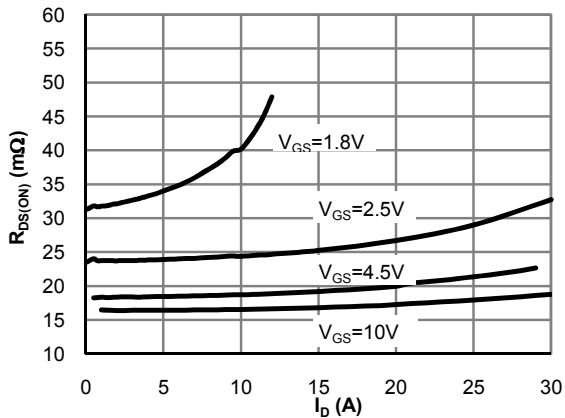


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

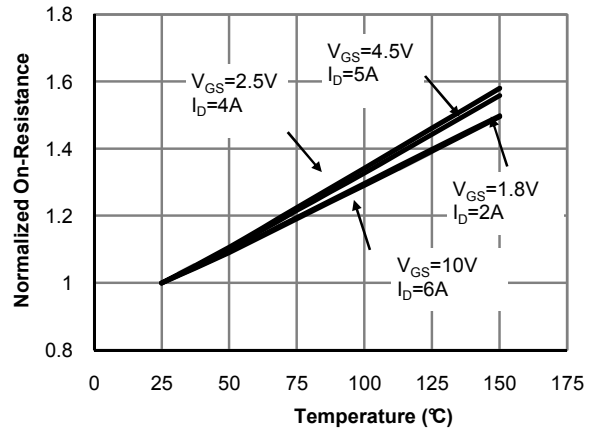


Figure 4: On-Resistance vs. Junction Temperature (Note E)

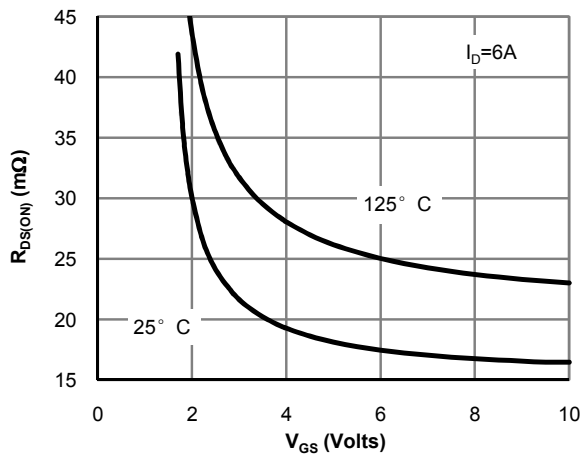


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

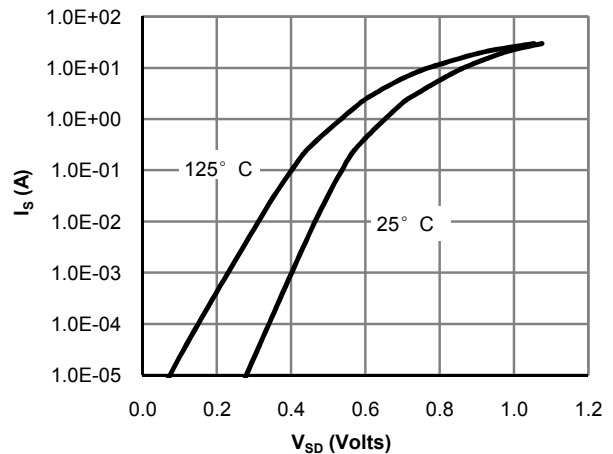


Figure 6: Body-Diode Characteristics (Note E)

# N-Channel MOSFET RC3420

## Typical Characteristics

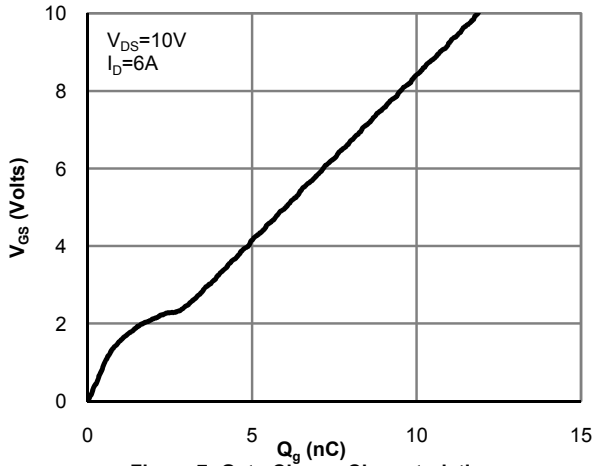


Figure 7: Gate-Charge Characteristics

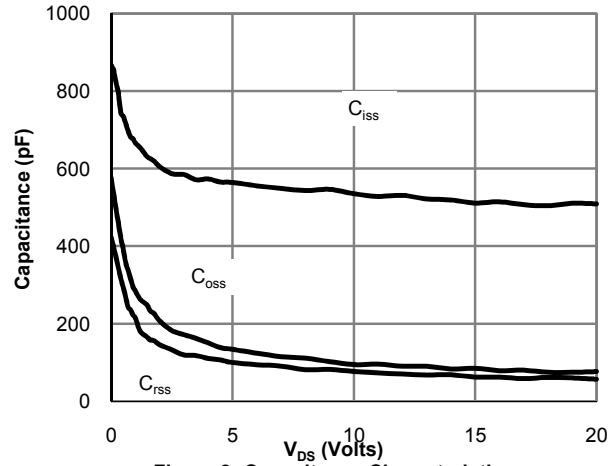


Figure 8: Capacitance Characteristics

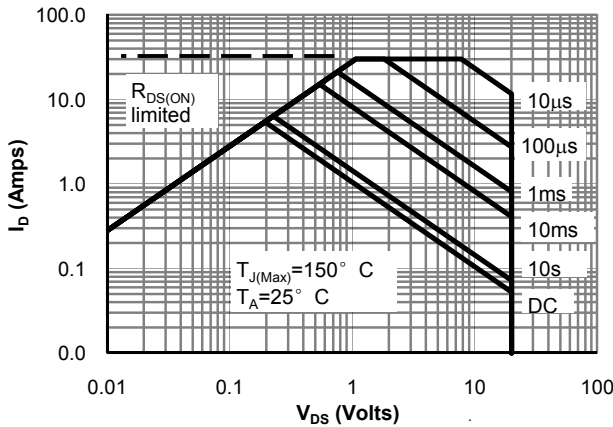


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

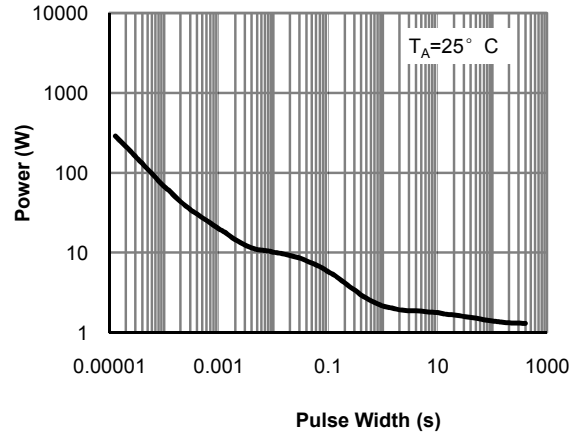


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

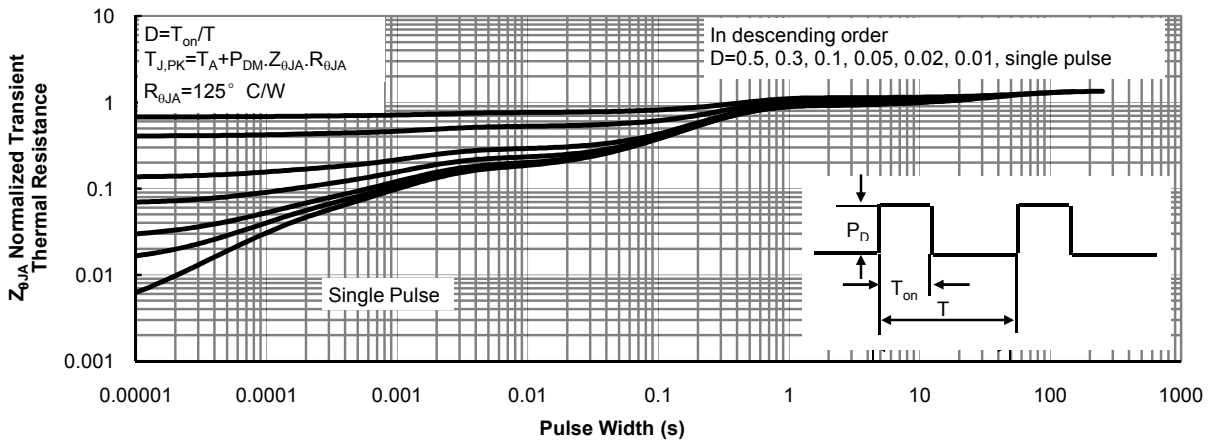


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)