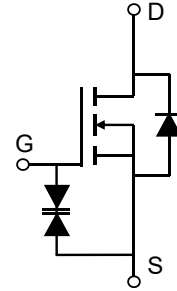


Description

Features

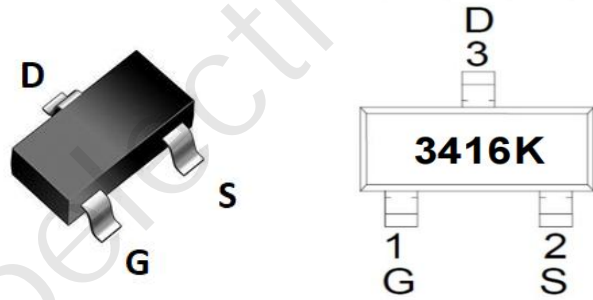
- 20V, 6A
 $R_{DS(ON)}$ Typ = 13mΩ @ $V_{GS} = 4.5V$
 $R_{DS(ON)}$ Typ = 18mΩ @ $V_{GS} = 2.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free
- ESD Protected: 2KV



Schematic Diagram

Application

- Load Switch
- PWM Application
- Power Management



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
CRMLTU3416K	3416K	SOT-23	TAPING	13"	3000	120000

Absolute Maximum Ratings (@ $T_J = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Value	Units	
V _{DS}	Drain-to-Source Voltage	20	V	
V _{GS}	Gate-to-Source Voltage	±10	V	
I _D	Continuous Drain Current	T _A = 25°C	6	A
		T _A = 100°C	4	A
I _{DM}	Pulsed Drain Current ⁽¹⁾	24	A	
P _D	Power Dissipation	T _A = 25°C	1.25	W
R _{θJA}	Thermal Resistance, Junction to Ambient ⁽²⁾	100	°C/W	
T _J , T _{STG}	Junction & Storage Temperature Range	-55 to 150	°C	

Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
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Off Characteristics

$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 20\text{V}$, $V_{GS} = 0\text{V}$	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 10\text{V}$	-	-	± 10	μA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = 250\mu\text{A}$	0.4	0.65	1.0	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance ⁽³⁾	$V_{GS} = 4.5\text{V}$, $I_D = 3\text{A}$	-	13	18	$\text{m}\Omega$
		$V_{GS} = 2.5\text{V}$, $I_D = 2\text{A}$	-	18	23	$\text{m}\Omega$

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$, $V_{DS} = 10\text{V}$, $f = 1\text{MHz}$	-	538	-	pF
C_{oss}	Output Capacitance		-	115	-	pF
C_{rss}	Reverse Transfer Capacitance		-	104	-	pF
Q_g	Total Gate Charge	$V_{GS} = 0$ to 4.5V $V_{DS} = 10\text{V}$, $I_D = 6\text{A}$	-	8	-	nC
Q_{gs}	Gate Source Charge		-	2	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	3	-	nC

Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = 4.5\text{V}$, $V_{DD} = 10\text{V}$ $I_D = 6\text{A}$, $R_{GEN} = 3\Omega$	-	1.2	-	ns
t_r	Turn-On Rise Time		-	2.4	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	22	-	ns
t_f	Turn-Off Fall Time		-	7	-	ns

Drain-Source Diode Characteristics and Max Ratings

I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	6	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	24	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0\text{V}$, $I_S = 6\text{A}$	-	-	1.2	V

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Test Circuit



Figure 1: Gate Charge Test Circuit & Waveform



Figure 2: Resistive Switching Test Circuit & Waveform

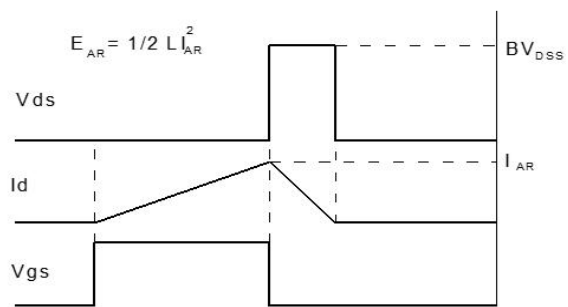
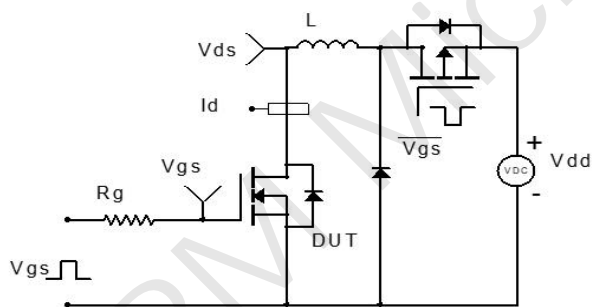
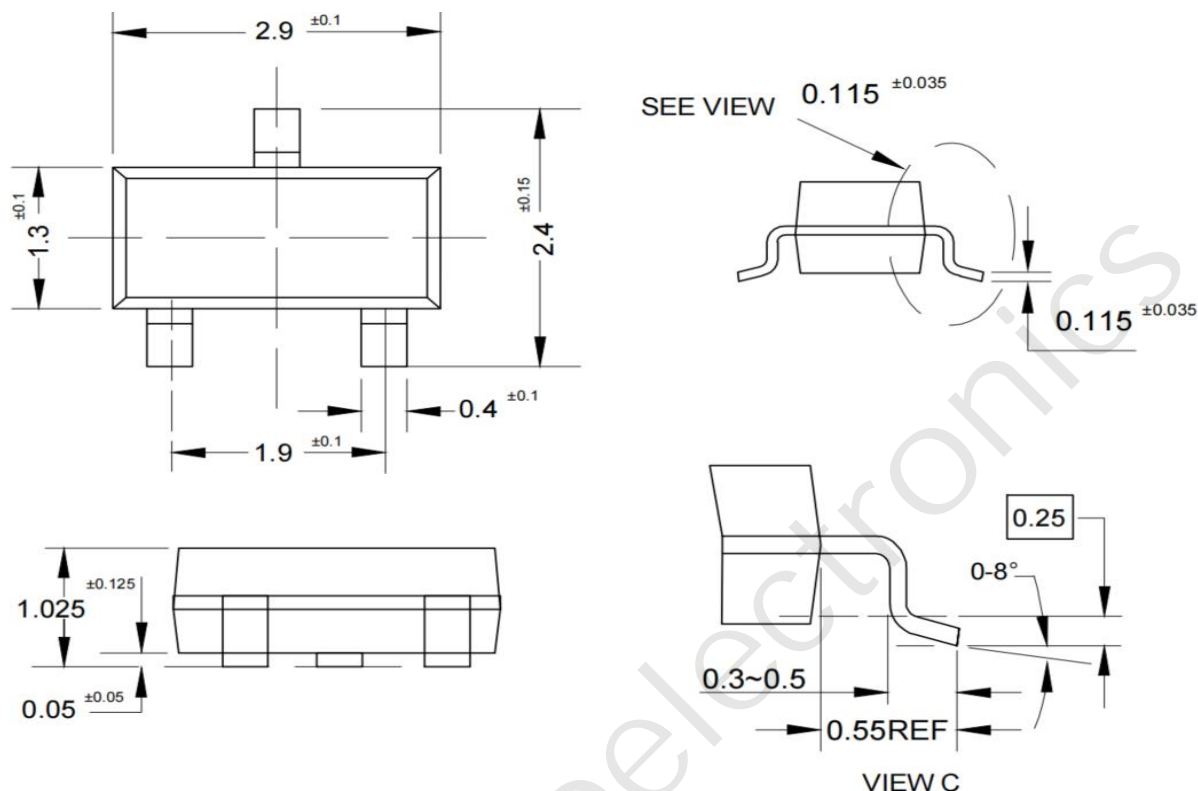


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform



Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(SOT-23)




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