

## Description

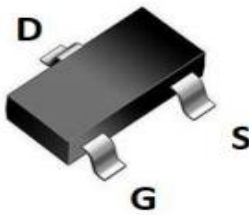
### N-channel Enhancement Mode Power MOSFET

#### Features

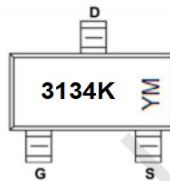
- 20V, 1A  
 $R_{DS(ON)}$  Typ=124mΩ @  $V_{GS} = 4.5V$   
 $R_{DS(ON)}$  Typ=187mΩ @  $V_{GS} = 2.5V$
- Advanced Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead Free
- ESD Protected: 2KV

#### Applications

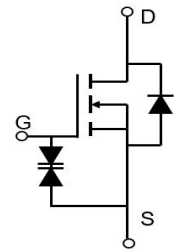
- Load Switch
- PWM Application
- Power Management



SOT-323-3L



Marking and Pin Assignment



Schematic Diagram

### Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel(pcs)	Per Carton (pcs)
3134K	CRMLATU3134K	TAPING	SOT-323-3L	7"	3000	120000

### Absolute Maximum Ratings (@ $T_A = 25^\circ C$ 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	$T_A = 25^\circ C$	A
		$T_A = 100^\circ C$	
$I_{DM}$	Pulsed Drain Current <sup>(1)</sup>	4	A
$P_D$	Power Dissipation	$T_A = 25^\circ C$	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient <sup>(2)</sup>	543	°C/W
$T_J, T_{STG}$	Junction & Storage Temperature Range	-55 to 150	°C

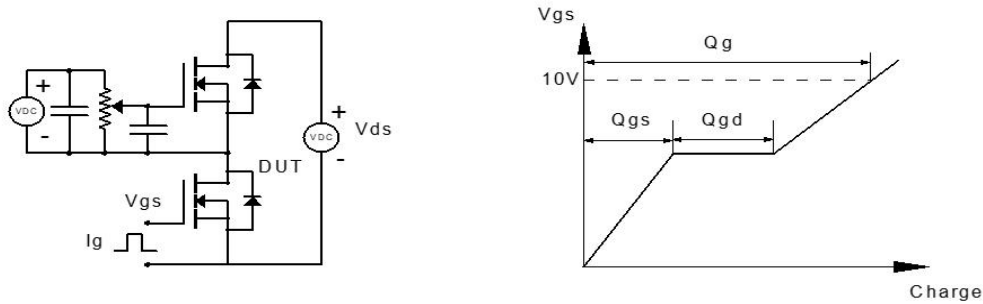


## Electrical Characteristics (T<sub>J</sub> = 25°C unless otherwise specified)

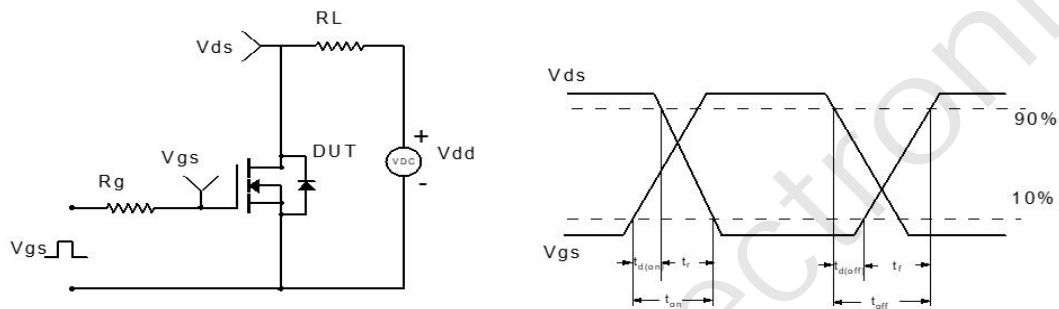
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V	20	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V	-	-	1.0	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±10V	-	-	±10	μA
On Characteristics						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	0.4	0.65	1.0	V
R <sub>DS(ON)</sub>	Static Drain-Source ON-Resistance <sup>(3)</sup>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 0.5A	-	124.0	161	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 0.3A	-	187.0	243.0	mΩ
Dynamic Characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 10V, f = 1MHz	-	60	-	pF
C <sub>oss</sub>	Output Capacitance		-	22	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	12	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = 0 to 4.5V V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.9A	-	1	-	nC
Q <sub>gs</sub>	Gate Source Charge		-	0.28	-	nC
Q <sub>gd</sub>	Gate Drain("Miller") Charge		-	0.22	-	nC
Switching Characteristics						
t <sub>d(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> = 4.5V, V <sub>DD</sub> = 10V I <sub>D</sub> = 0.5A, R <sub>GEN</sub> = 10Ω	-	2	-	ns
t <sub>r</sub>	Turn-On Rise Time		-	19	-	ns
t <sub>d(off)</sub>	Turn-Off DelayTime		-	10	-	ns
t <sub>f</sub>	Turn-Off Fall Time		-	23	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	1	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	4	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> = 0V, I <sub>S</sub> = 0.5A	-	-	1.2	V

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
  2. R<sub>θJA</sub> is measured with the device mounted on a 1inch<sup>2</sup> pad of 2oz copper FR4 PCB
  3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%.

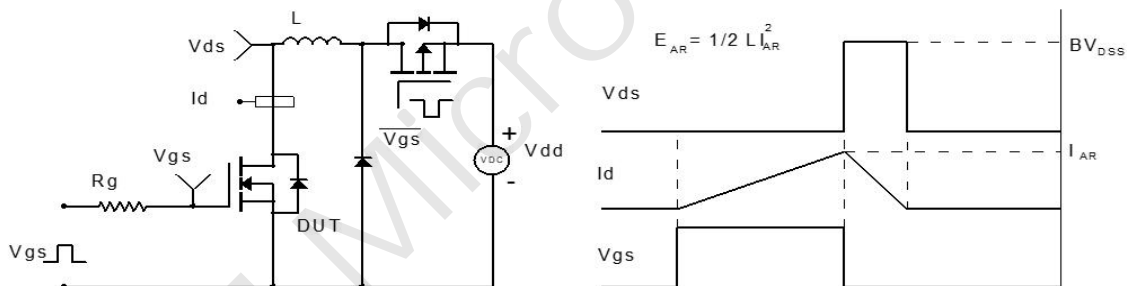
## Test Circuit



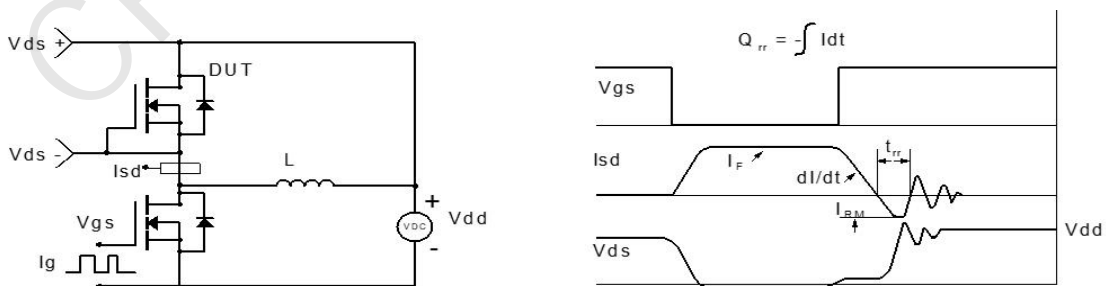
**Figure 1: Gate Charge Test Circuit & Waveform**



**Figure 2: Resistive Switching Test Circuit & Waveform**

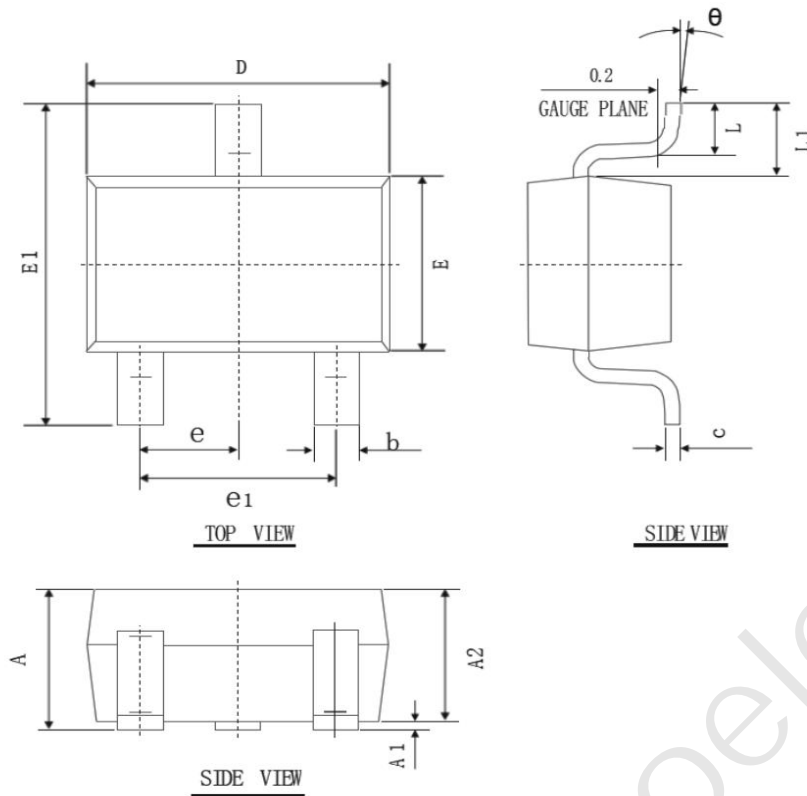


**Figure 3: Unclamped Inductive Switching Test Circuit & Waveform**



**Figure 4: Diode Recovery Test Circuit & Waveform**

## Package Mechanical Data(SOT-323-3L)



COMMON DIMENSIONS  
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	0.90	1.00	1.10
A1	0.00	0.05	0.10
A2	0.90	0.95	1.00
b	0.20	0.25	0.30
c	0.08	0.10	0.15
e1	1.20	1.30	1.40
D	2.00	2.10	2.20
E	1.15	1.25	1.35
E1	2.15	2.30	2.45
L	0.26	0.36	0.46
$\theta$	0°	4°	8°
L1		0.525 REF	
e		0.65 TYP	

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