

NCE N-Channel Enhancement Mode Power MOSFET

Description

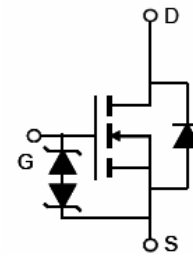
The NCE3134 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 1.8V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

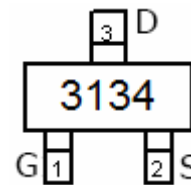
- $V_{DS} = 20V, I_D = 0.75A$
- $R_{DS(ON)} < 380m\Omega @ V_{GS}=4.5V$
- $R_{DS(ON)} < 450m\Omega @ V_{GS}=2.5V$
- $R_{DS(ON)} < 800m\Omega @ V_{GS}=1.8V$
- High power and current handling capability
- Lead free product is acquired
- Surface mount package

Application

- Battery protection
- Load switch



Schematic diagram



Marking and pin assignment



SOT-23 top view

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
3134	NCE3134	SOT-23	Ø180mm	8 mm	3000 units

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current-Continuous	I_D	0.75	A
Drain Current-Pulsed ^(Note 1)	I_{DM}	1.8	A
Maximum Power Dissipation	P_D	0.35	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ C$

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient ^(Note 2)	$R_{\theta JA}$	357	$^\circ C/W$
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Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	-	-	±20	μA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.35	0.54	1.1	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =1.8V, I _D =0.45A	-	390	800	mΩ
		V _{GS} =2.5V, I _D =0.55A	-	320	450	mΩ
		V _{GS} =4.5V, I _D =0.65A	-	270	380	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =0.5A	-	1.6	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{iss}	V _{DS} =16V, V _{GS} =0V, F=1.0MHz	-	79	120	PF
Output Capacitance	C _{oss}		-	13	20	PF
Reverse Transfer Capacitance	C _{rss}		-	9	15	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V, I _D =0.5A V _{GS} =4.5V, R _{GEN} =10Ω	-	6.7	-	nS
Turn-on Rise Time	t _r		-	4.8	-	nS
Turn-Off Delay Time	t _{d(off)}		-	17.3	-	nS
Turn-Off Fall Time	t _f		-	7.4	-	nS
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =0.5A	-	-	1.2	V
Diode Forward Current (Note 2)	I _S		-	-	0.75	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics

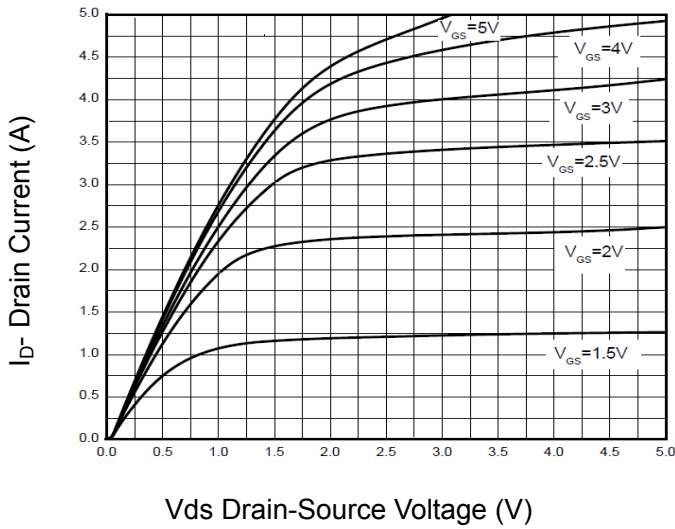


Figure 1 Drain-Source On-Resistance

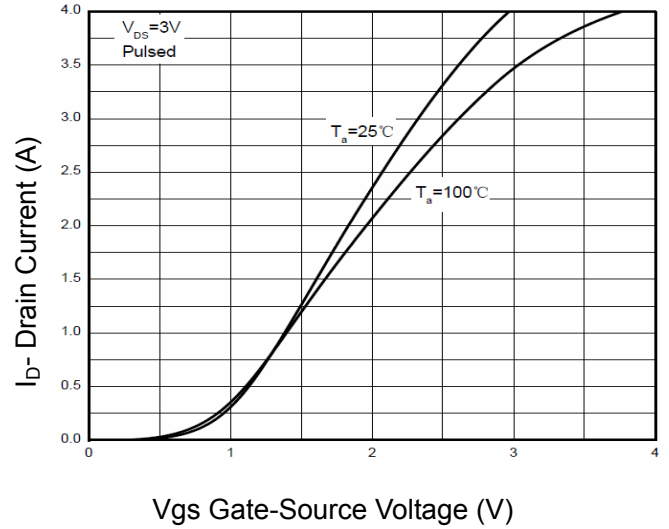


Figure 2 Output Characteristics

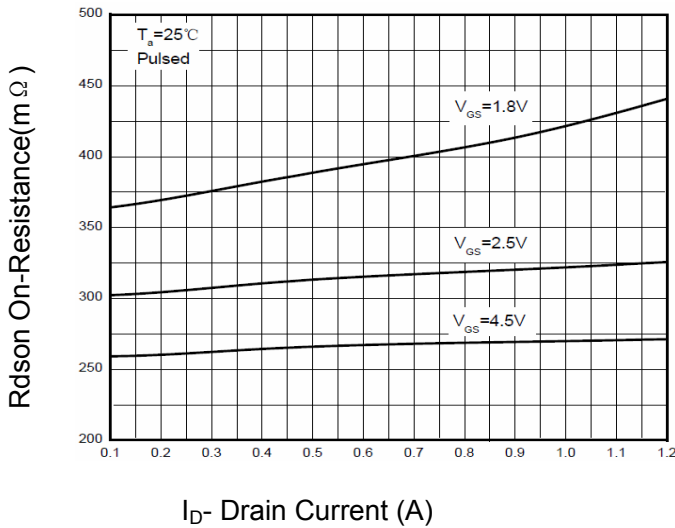


Figure 3 Drain-Source On-Resistance

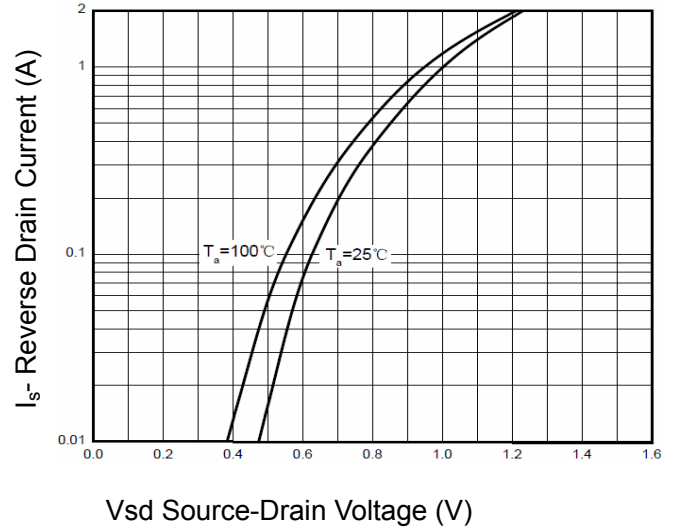


Figure 4 Source- Drain Diode Forward

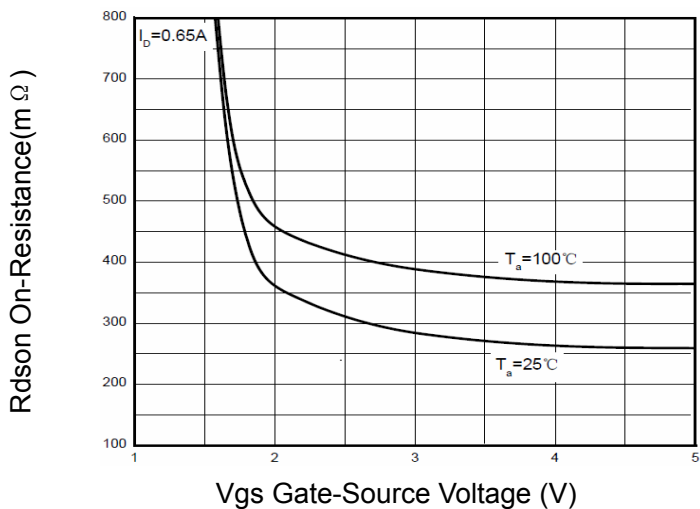


Figure 5 Rds(on) vs Vgs

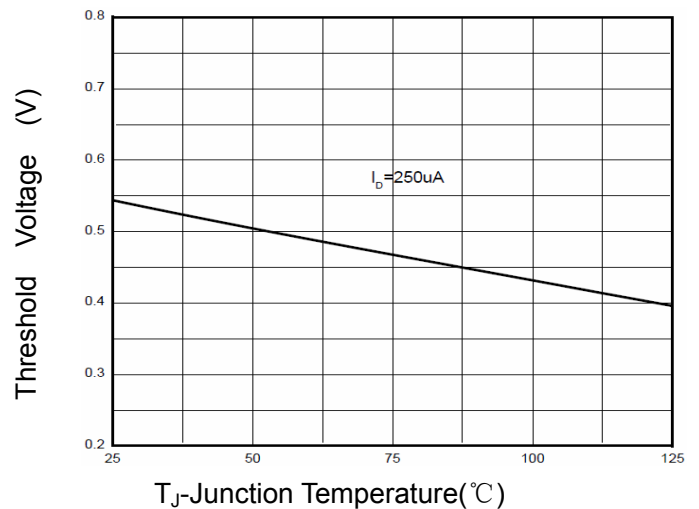
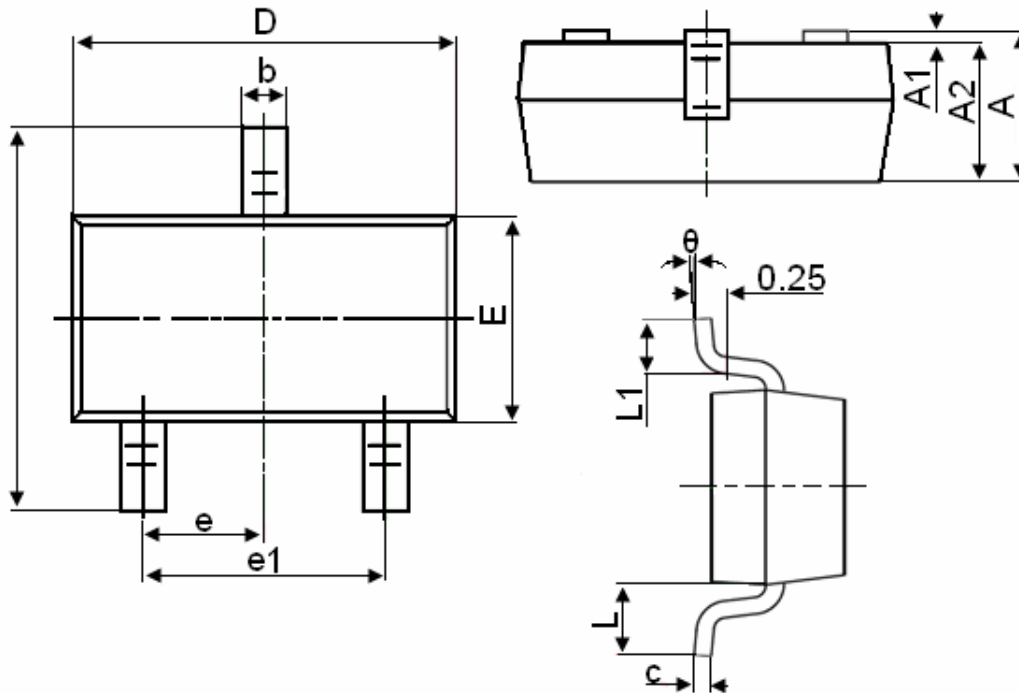


Figure 6 Threshold Voltage vs Tj

SOT-23 Package Information


Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance $\pm 0.10\text{mm}$ (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

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