Self-Protected Low Side Driver with Temperature and Current Limit

42 V, 14 A, Single N-Channel

NCV8403A, NCV8403B

NCV8403A/B is a three terminal protected Low-Side Smart Discrete device. The protection features include overcurrent, overtemperature, ESD and integrated Drain-to-Gate clamping for overvoltage protection. This device offers protection and is suitable for harsh automotive environments.

Features

- Short Circuit Protection
- Thermal Shutdown with Automatic Restart
- Over Voltage Protection
- Integrated Clamp for Inductive Switching
- ESD Protection

MAXIMUM RATINGS

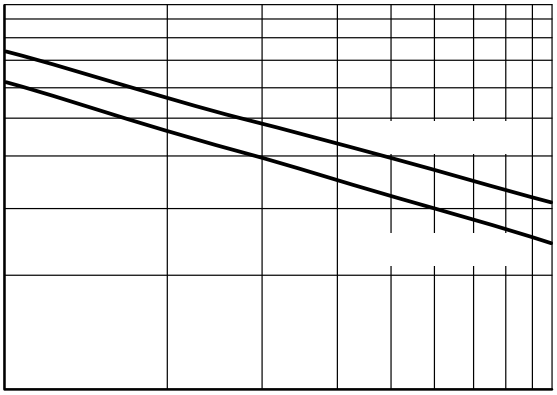
Rating	Symbol	Value	Unit
– –			

MOSFET ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
– – µ µ –					

51((th.892 35.88.5213 T562. unl8 0 8 425.5[illegible]1 562. unl8 0 0 8 496.8567 678.7276 T51 15.8 T* (51)Tj ET 483.

TYPICAL PERFORMANCE CURVES



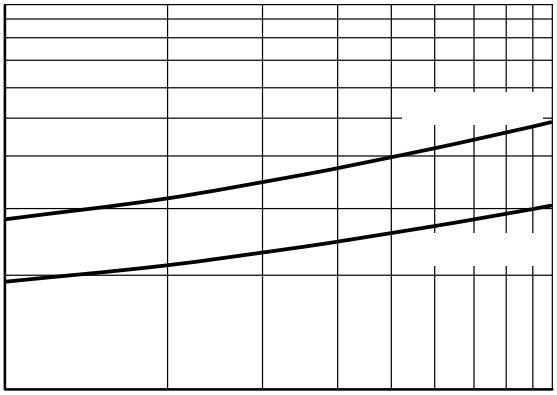


Figure 2. Single Pulse Maximum
Current vs. Load In

igure 3. Single Pulse Maximum Switching
Energy vs. Load Inductance

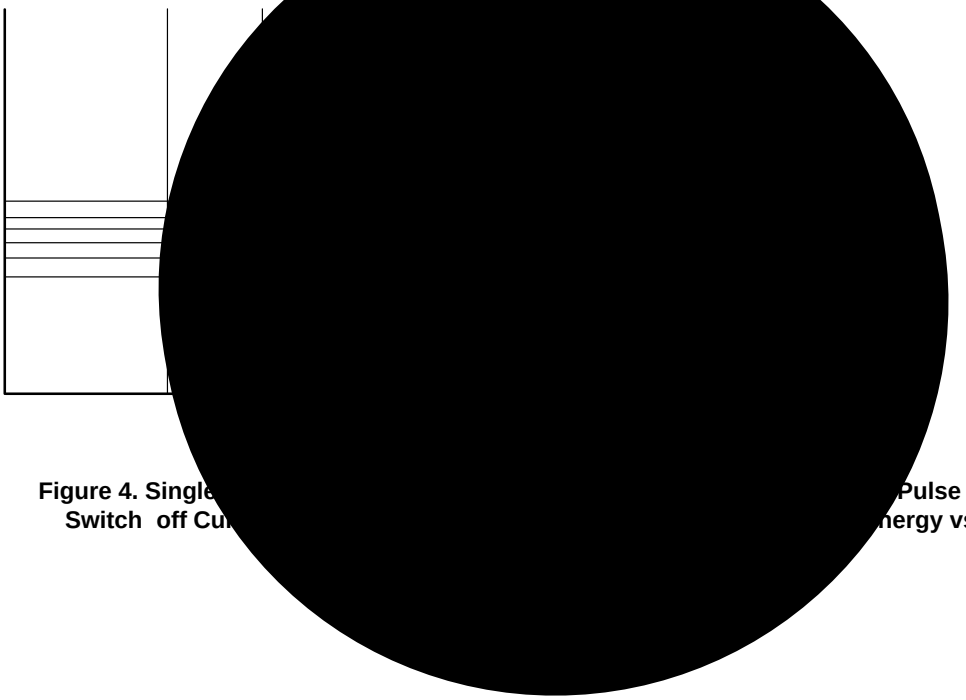


Figure 4. Single
Switch off Cu

Pulse Maximum Inductive
nergy vs. Time in Clamp

TYPICAL PERFORMANCE CURVES

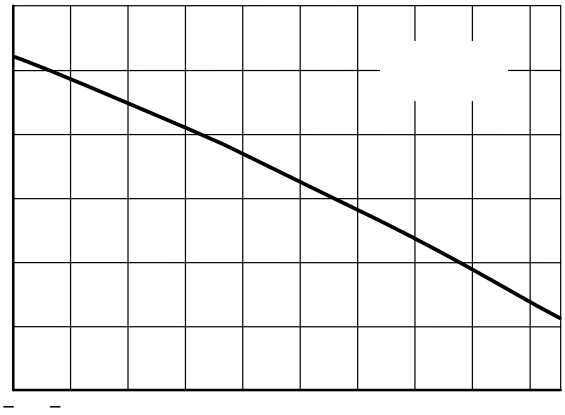


Figure 14. Normalized Threshold Voltage vs. Temperature

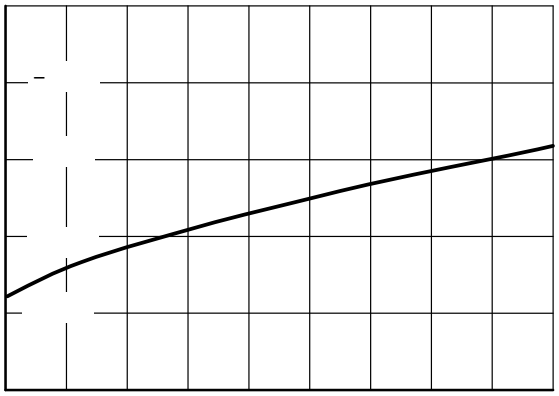


Figure 15. Source Drain Diode Forward Characteristics

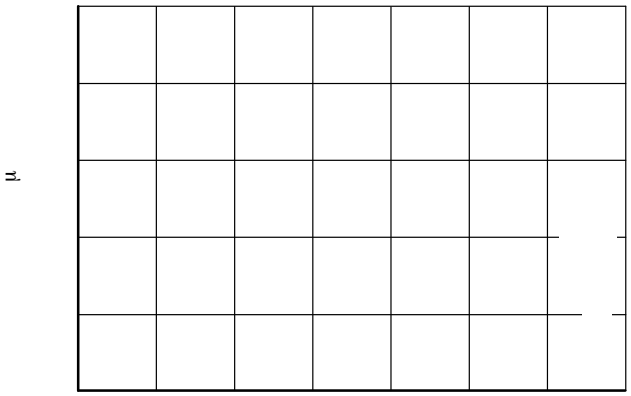


Figure 16. Resistive Load Switching Time vs. Gate Source Voltage

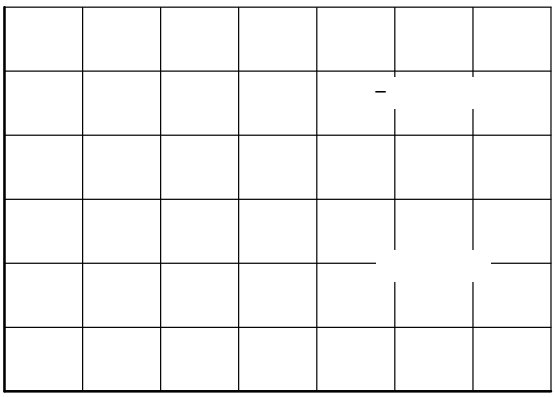


Figure 17. Resistive Load Switching Drain Source Voltage Slope vs. Gate Source Voltage

TEST CIRCUITS AND WAVEFORMS

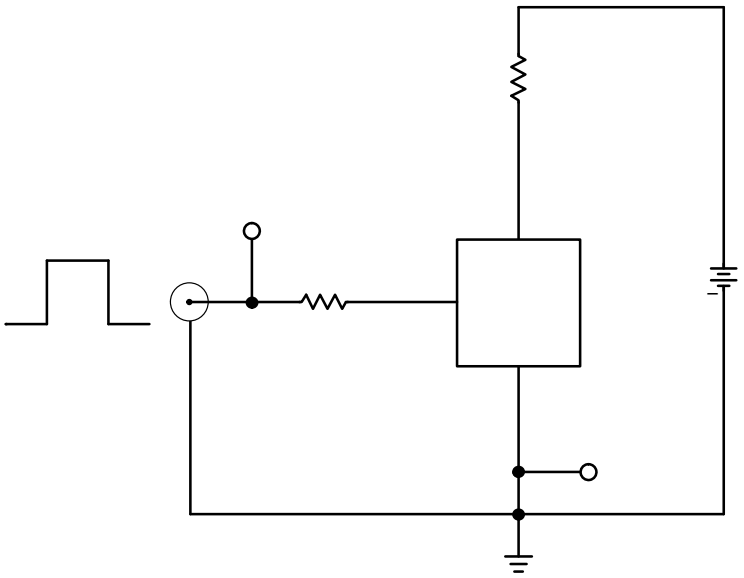


Figure 24. Resistive Load Switching Test Circuit

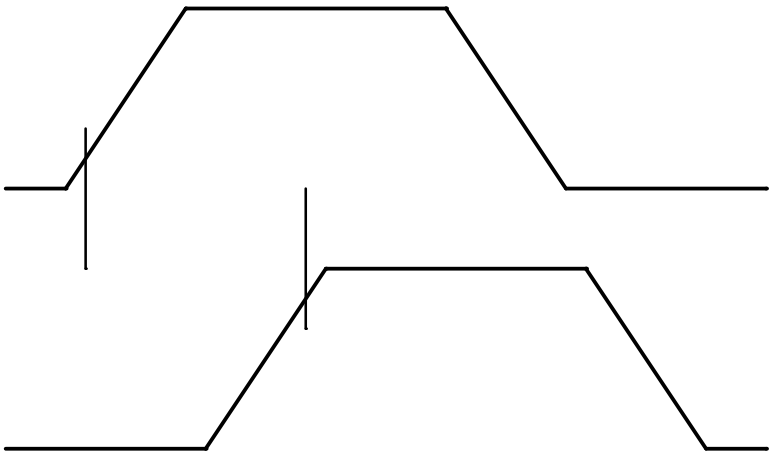


Figure 25. Resistive Load Switching Waveforms

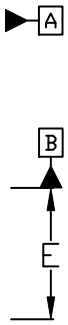
ORDERING INFORMATION

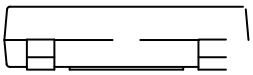
Device	Package	Shipping
	– –	
	– –	
	–	
	–	

SOT−223 (TO−261)
CASE 318E 04
ISSUE R

DATE 02 OCT 2018

SCALE 1:1





	MILLIMETERS		
DIM	MIN.	NOM.	MAX.
A	1.50	1.63	1.75
A1	0.02	0.06	0.10
b			
D	6.30	6.50	6.70
E	3.30	3.50	3.70
e	2.30 BSC		

SOT−223 (TO−261)
CASE 318E 04
ISSUE R

DATE 02 OCT 2018

LE 1:
IN 1. BA E
2. C LLEC
3. EMI E
4. C LLEC

LE 2:
IN 1. AN DE
2. CA H DE
3. NC
4. CA H DE

LE 3:
IN 1. GA E
2. DAIN
3. CE
4. DAIN

LE 4:
IN 1. CE
2. DAIN
3. GA E
4. DAIN

LE 5:
IN 1. DAIN
2. GA E
3. CE
4. GA E

LE 6:
IN 1. E N
2. IN
3.
4. IN

LE 7:
IN 1. AN DE 1
2. CA H DE
3. AN DE 2
4. CA H DE

LE 8:
CANCELLED

LE 9:
IN 1. IN
2. GA ND
3. L GIC
4. GA ND

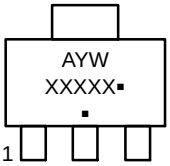
LE 10:
IN 1. CA H DE
2. AN DE
3. GA E
4. AN DE

LE 11:
IN 1. M 1
2. M 2
3. GA E
4. M 2

LE 12:
IN 1. IN
2.
3. NC
4.

LE 13:
IN 1. GA E
2. C LLEC
3. EMI E
4. C LLEC

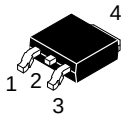
GENERIC
MARKING DIAGRAM*



A = Assembly Location
Y = Year
W = Work Week
XXXXX = Specific Device Code
▪ = Pb Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.



SCALE 1:1

DPAK (SINGLE GAUGE)
CASE 369C
ISSUE G

DATE 31 MAY 2023

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 2:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

STYLE 3:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

STYLE 4:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

STYLE 5:
PIN 1. GATE
2. ANODE
3. CATHODE
4. ANODE

STYLE 6:
PIN 1. MT1
2. MT2
3. GATE
4. MT2

STYLE 7:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 8:
PIN 1. N/C
2. CATHODE
3. ANODE
4. CATHODE

STYLE 9:
PIN 1. ANODE
2. CATHODE
3. RESISTOR ADJUST
4. CATHODE

STYLE 10:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE