

NCV8408

Self-Protected Low Side Driver with Temperature and Current Limit

42 V, 10 A, Single N-Channel, DPAK

NCV8408 is a single channel protected Low-Side Smart Discrete device. The protection features include overcurrent, overtemperature, ESD and integrated Drain-to-Gate clamping for overvoltage protection. Thermal protection includes a latch which can be reset by toggling the input. This device is suitable for harsh automotive environments.

Features

- Short Circuit Protection
- Thermal Shutdown with Latched Reset
- Gate Input Current Flag During Latched Fault Condition
- Overvoltage Protection
- Integrated Clamp for Inductive Switching
- ESD Protection
- dV/dt Robustness
- Analog Drive Capability (Logic Level Input)
- NCV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant

Typical Applications

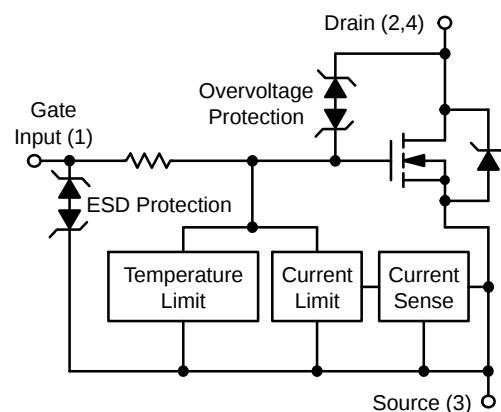
- Switch a Variety of Resistive, Inductive and Capacitive Loads
- Can Replace Electromechanical Relays and Discrete Circuits
- Automotive / Industrial



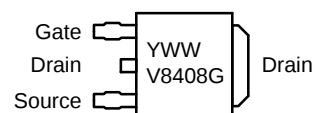
ON Semiconductor®

<http://onsemi.com>

V _{DSS} (Clamped)	R _{DS(on)} TYP	I _D MAX (Limited)
42 V	55 mΩ @ 5 V	10 A



MARKING DIAGRAM



Y = Year
WW = Work Week
V8408 = Specific Device Code
G = Pb-Free Package

ORDERING INFORMATION

Device	Package	Shipping†
NCV8408DTRKG	DPAK (Pb-Free)	2500/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Drain-to-Source Voltage Internally Clamped	V_{DSS}	42	Vdc
Drain-to-Gate Voltage Internally Clamped ($R_{GS} = 1.0\text{ M}\Omega$)	V_{DGR}	42	V
Gate-to-Source Voltage	V_{GS}	± 14	Vdc
Continuous Drain Current	I_D	Internally Limited	
Gate Input Current ($V_{GS} = \pm 14\text{ V}_{DC}$)	I_{GS}	± 10	mA
Source to Drain Current	I_{SD}	4.0	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 1) @ $T_A = 25^\circ\text{C}$ (Note 2)	P_D	1.8 2.3	W
Thermal Resistance Junction-to-Ambient Steady State (Note 1) Junction-to-Ambient Steady State (Note 2) Junction-to-Tab Steady State (Note 3)	$R_{\theta JA}$ $R_{\theta JA}$ $R_{\theta JT}$	70 55 2.1	$^\circ\text{C/W}$
Single Pulse Inductive Load Switching Energy ($V_{DD} = 20\text{ Vdc}$, $V_{GS} = 5.0\text{ V}$, $I_L = 8.0\text{ A}$)	E_{AS}	185	mJ
Repetitive Pulse Inductive Load Switching Energy ($V_{DD} = 20\text{ Vdc}$, $V_{GS} = 5.0\text{ V}$, $I_L = 8.0\text{ A}$, $T_J = 25^\circ\text{C}$)	E_{AR}	128	
Repetitive Pulse Inductive Load Switching Energy ($V_{DD} = 20\text{ Vdc}$, $V_{GS} = 5.0\text{ V}$, $I_L = 6.8\text{ A}$, $T_J = 105^\circ\text{C}$)	E_{AR}	92	
Load Dump Voltage ($V_{GS} = 0$ and 10 V , $R_I = 2.0\text{ }\Omega$, $R_L = 4.5\text{ }\Omega$, $t_d = 400\text{ ms}$, $T_J = 25^\circ\text{C}$)	V_{LD}	63	V
Operating Junction Temperature	T_J	-40 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to 150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Surface-mounted onto minimum pad FR4 PCB (1 oz Cu, 0.06" thick).
2. Surface-mounted onto 2" square FR4 PCB, (1" square, 1 oz Cu, 0.06" thick).
3. Surface-mounted onto minimum pad FR4 PCB (2 oz Cu, 0.06" thick).

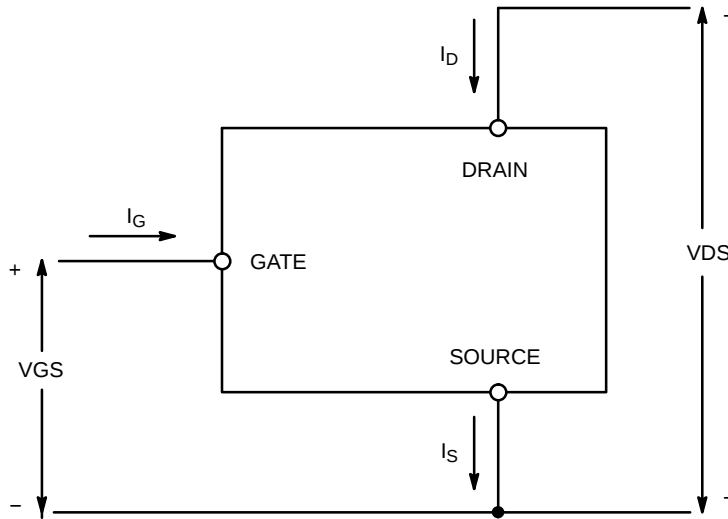


Figure 1. Voltage and Current Convention

TEST CIRCUITS AND WAVEFORMS

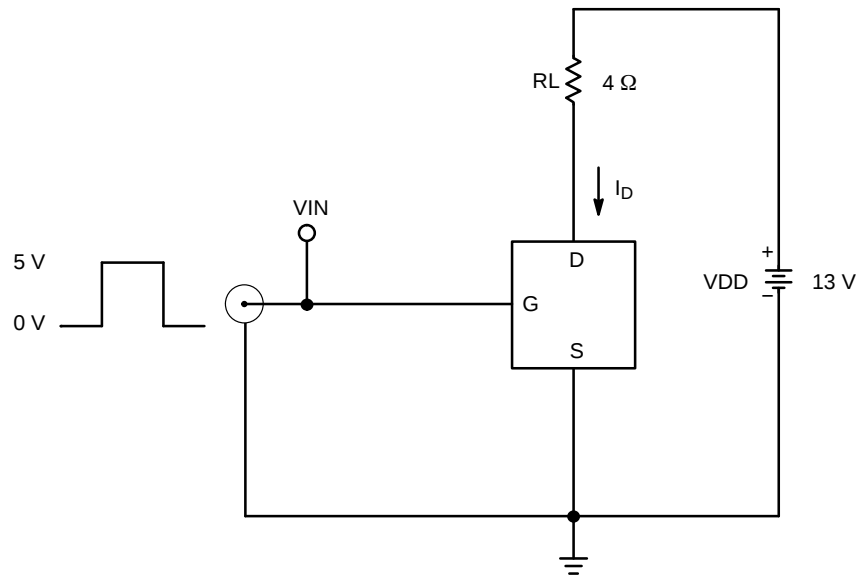


Figure 2. Resistive Load Switching Test Circuit

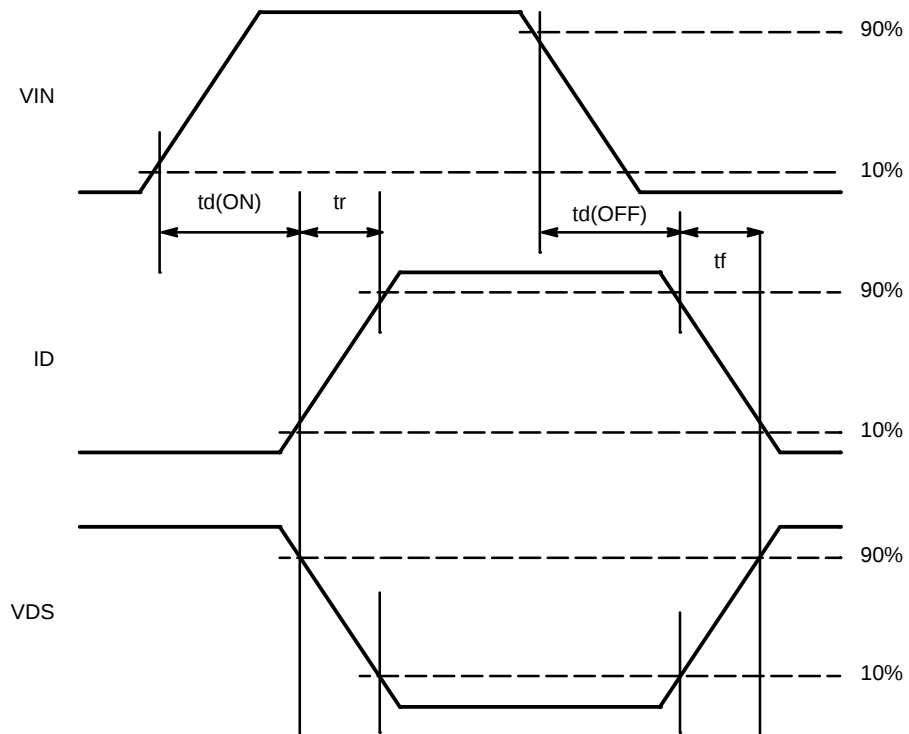


Figure 3. Resistive Load Switching Waveforms

TEST CIRCUITS AND WAVEFORMS

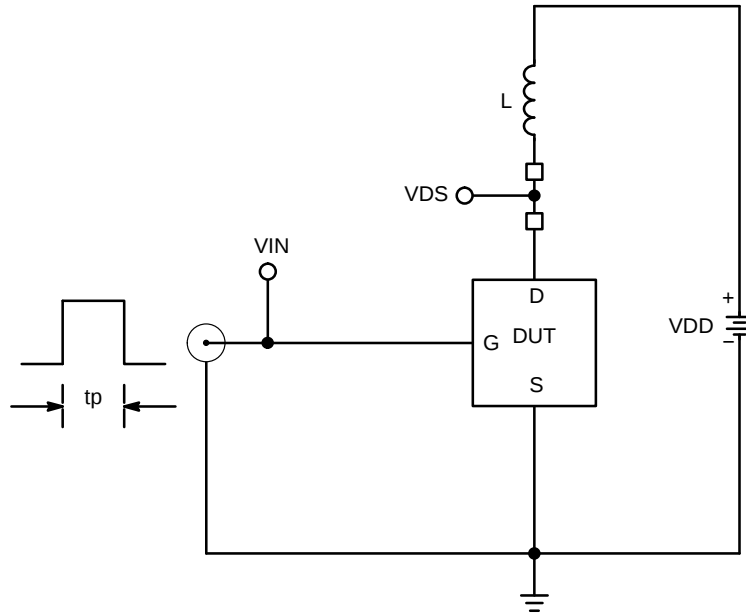


Figure 4. Inductive Load Switching Test Circuit

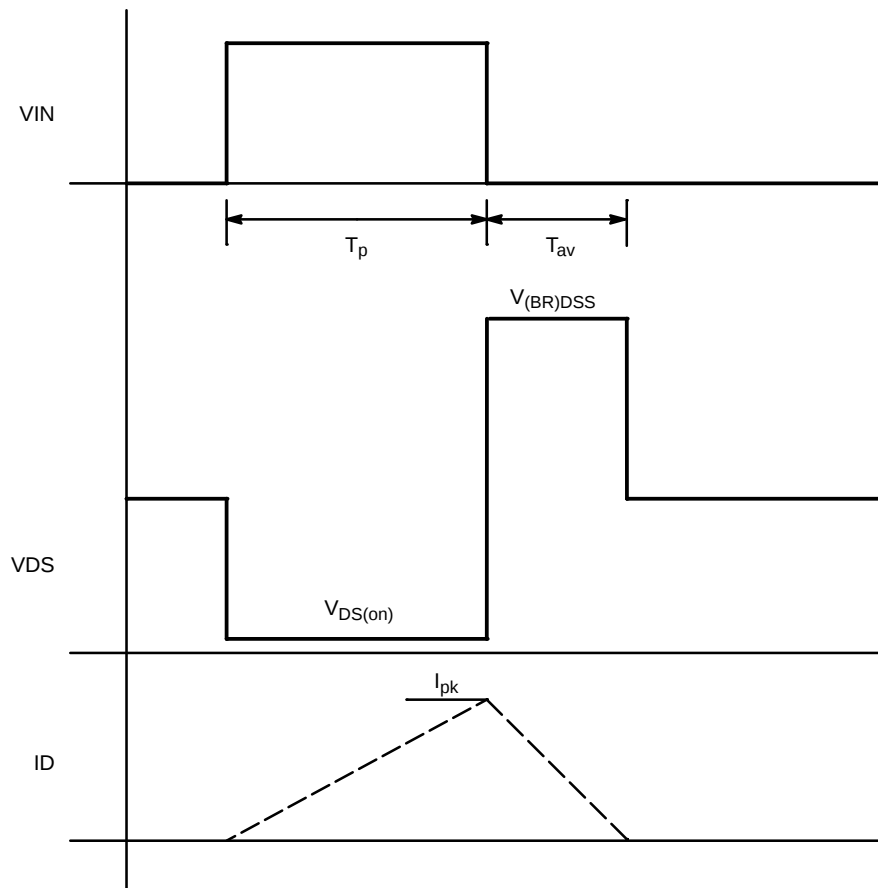


Figure 5. Inductive Load Switching Waveforms

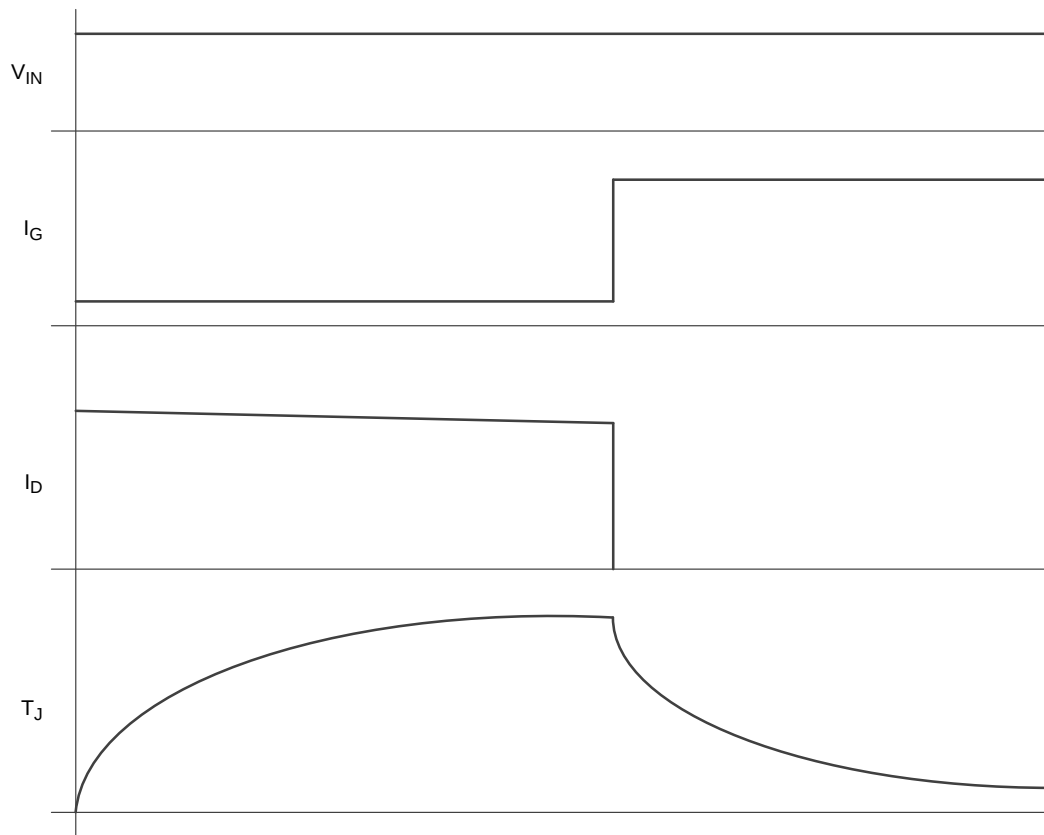


Figure 6. Short-Circuit Protection Behavior

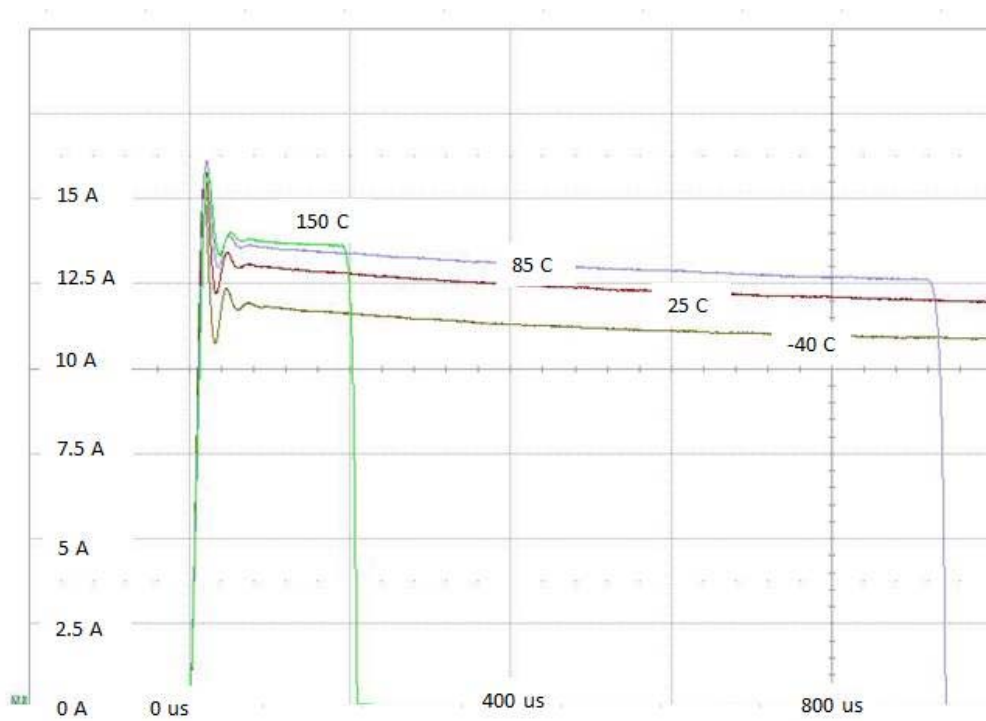


Figure 7. Turn on into Short Circuit Device Response

TYPICAL CHARACTERISTICS

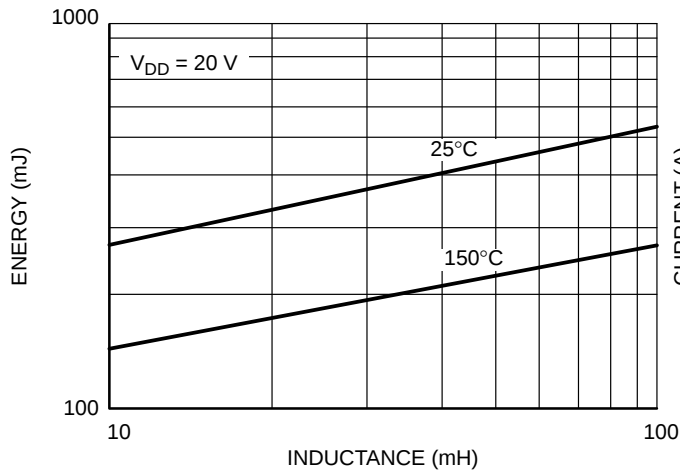


Figure 8. NCV8408 Maximum Switch Off Energy vs Inductance

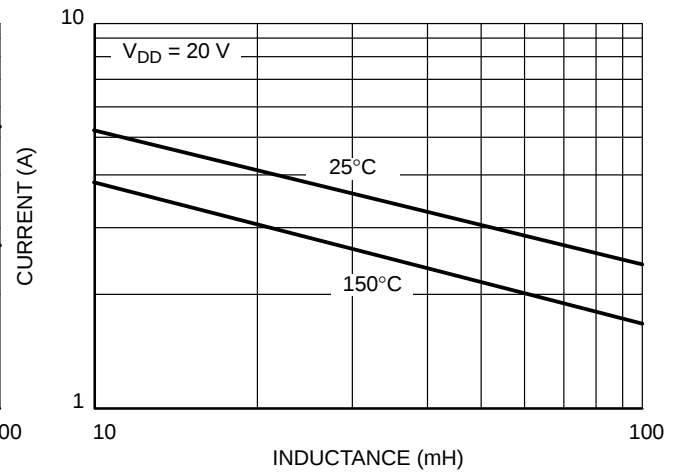


Figure 9. NCV8408 Maximum Switch Off Current vs Inductance

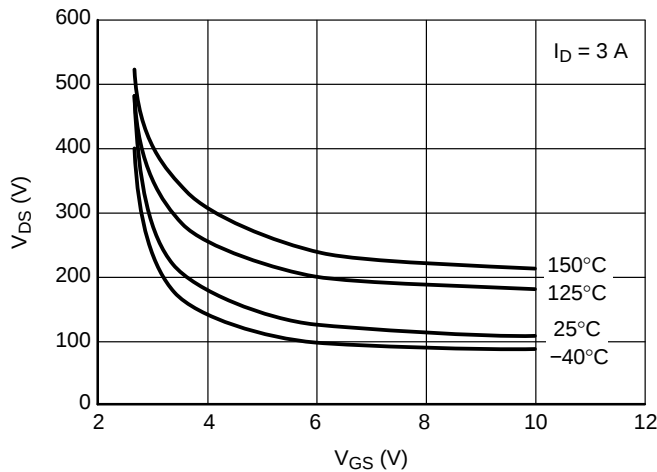


Figure 10. V_{GS} vs V_{DS}

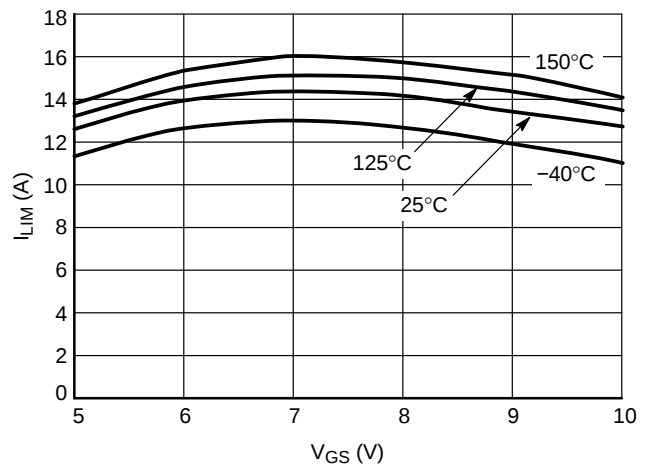


Figure 11. Current Limit vs. Gate Voltage

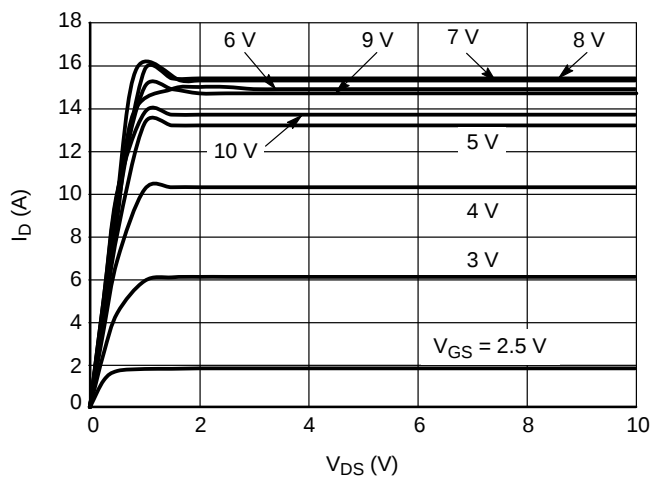


Figure 12. Drain Current vs. Drain Voltage

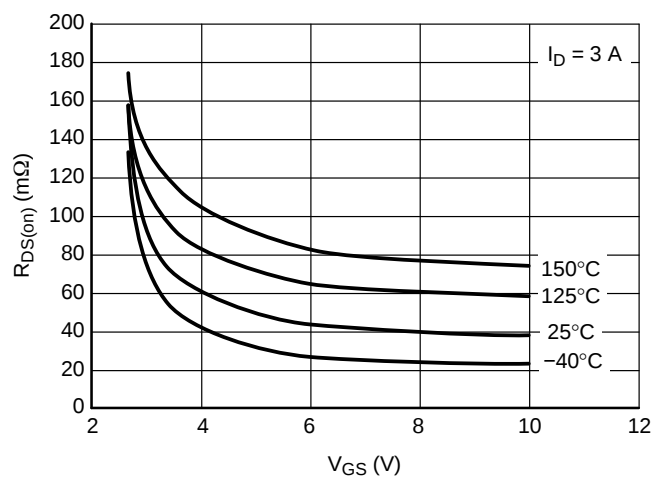


Figure 13. $R_{DS(on)}$ vs. Gate Voltage

TYPICAL CHARACTERISTICS

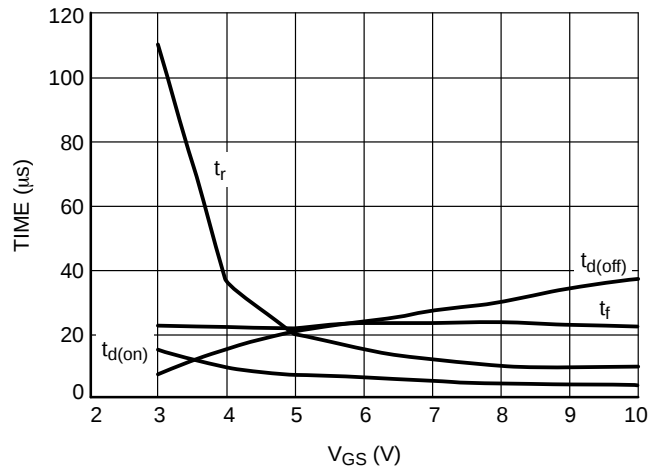


Figure 14. Resistive Switching

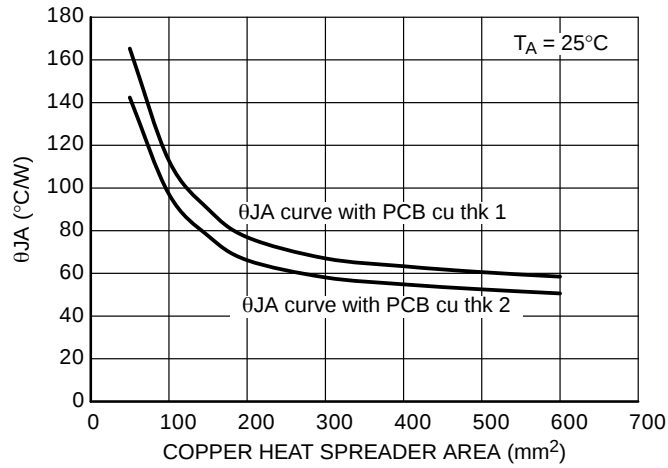


Figure 15. $R_{\theta JA}$ vs. Copper Area

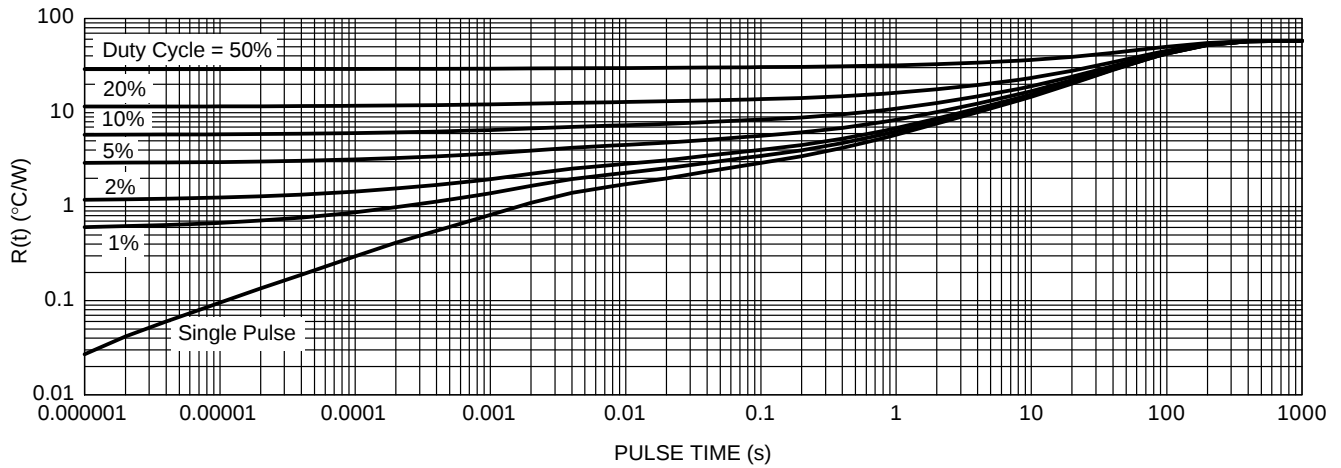


Figure 16. Transient Thermal Resistance

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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