

Power MOSFET 30V, 72mΩ, 3.5A, Single N-Channel

This low-profile high-power MOSFET is produced using ON Semiconductor's trench technology, which is specifically designed to minimize gate charge and ultra low on resistance. This device is suitable for applications with low gate charge driving or ultra low on resistance requirements.

Features

- Low On-Resistance
- 4V drive
- ESD Diode-Protected Gate
- Pb-Free, Halogen Free and RoHS compliance
- Ultra small package SCH6 (1.6mm×1.6mm×0.56mm)

Typical Applications

- Load Switch
- Battery Switch

SPECIFICATIONS

ABSOLUTE MAXIMUM RATING at Ta = 25°C (Note 1)

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V _{DSS}	30	V
Gate to Source Voltage	V _{GSS}	±20	V
Drain Current (DC)	I _D	3.5	A
Drain Current (Pulse) PW ≤ 10μs, duty cycle ≤ 1%	I _{DP}	14	A
Power Dissipation When mounted on ceramic substrate (900mm ² × 0.8mm)	P _D	1	W
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

Note 1 : Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900mm ² × 0.8mm)	R _{θJA}	125	°C/W

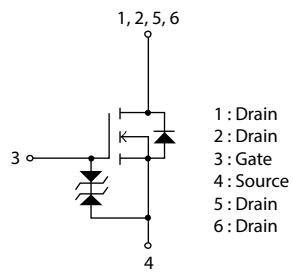


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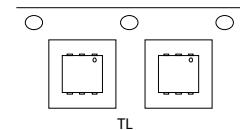
www.onsemi.com

V _{DSS}	R _{D(on) Max}	I _{D Max}
30V	72mΩ@ 10V	3.5A
	110mΩ@ 4.5V	
	128mΩ@ 4V	

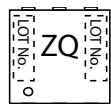
ELECTRICAL CONNECTION N-Channel



PACKING TYPE : TL



MARKING



ORDERING INFORMATION

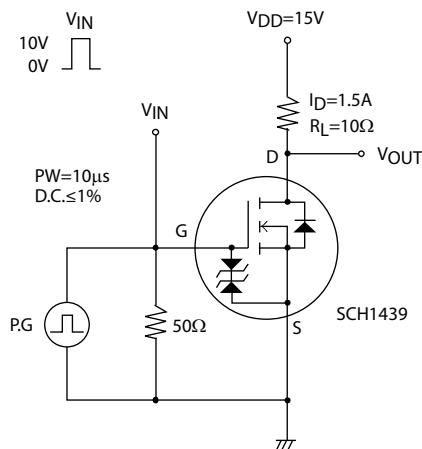
See detailed ordering and shipping information on page 5 of this data sheet.

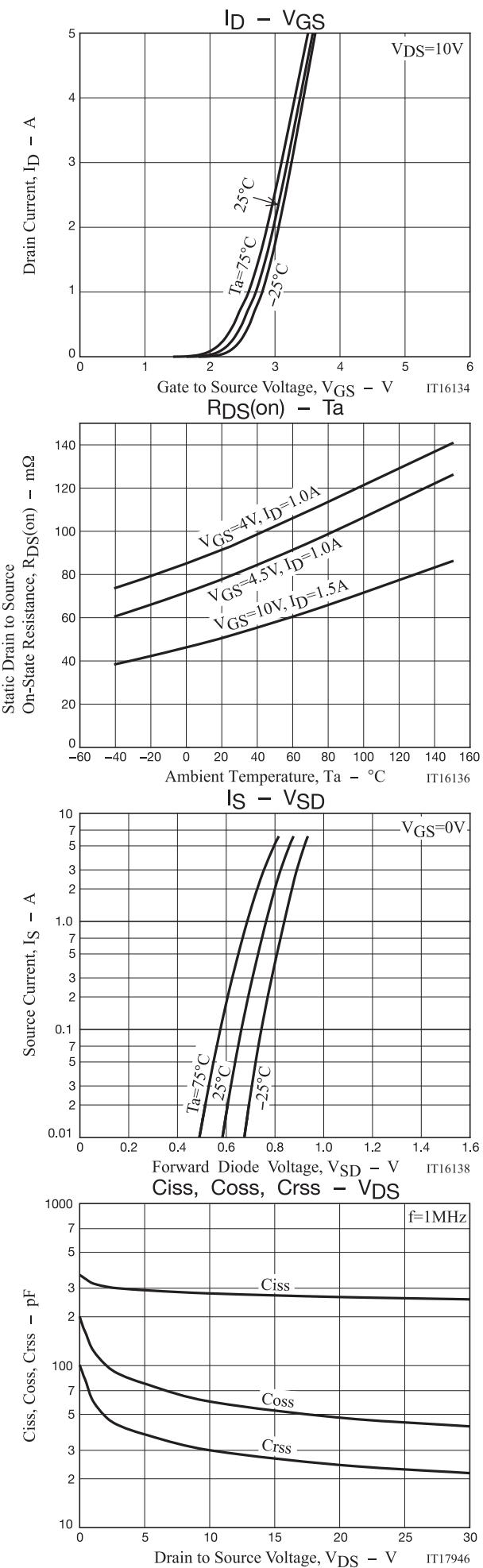
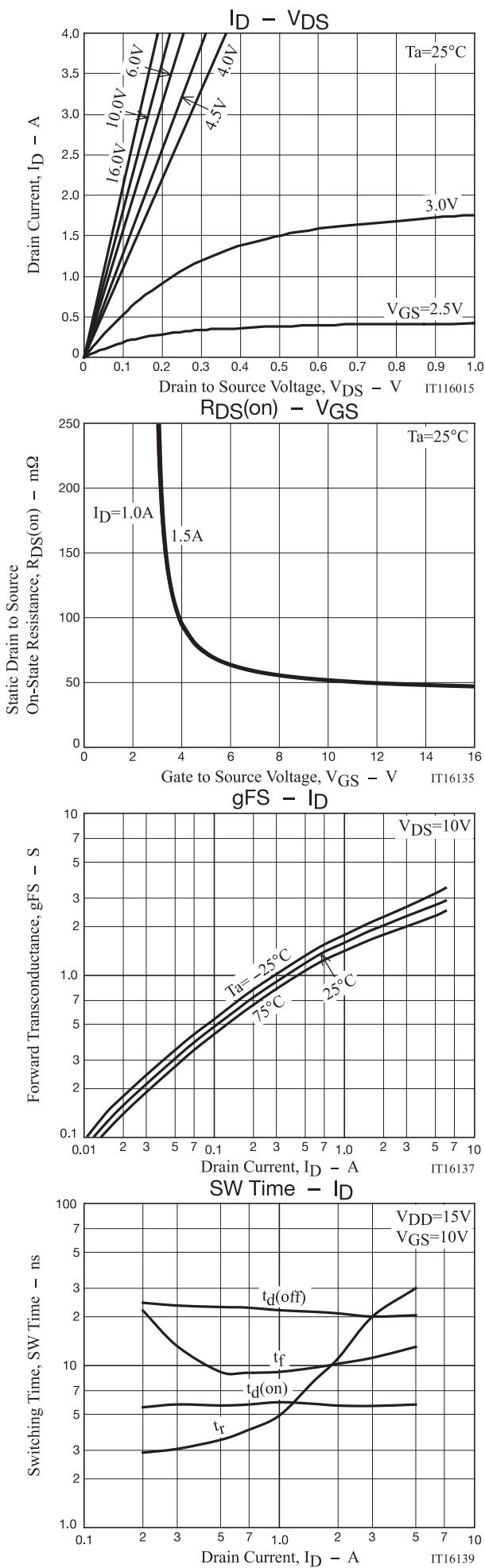
ELECTRICAL CHARACTERISTICS at $T_a = 25^\circ\text{C}$ (Note 2)

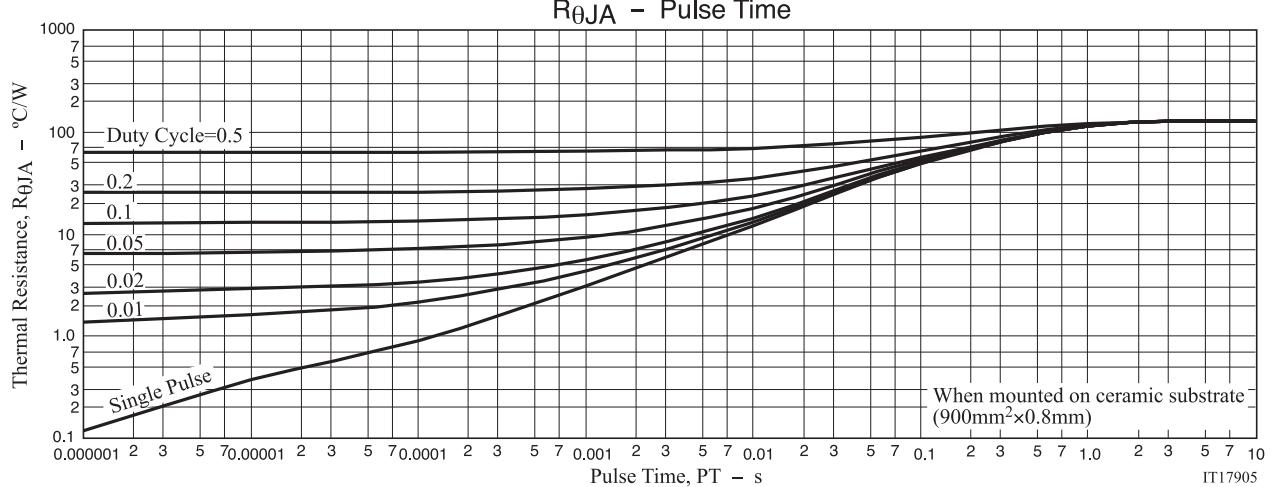
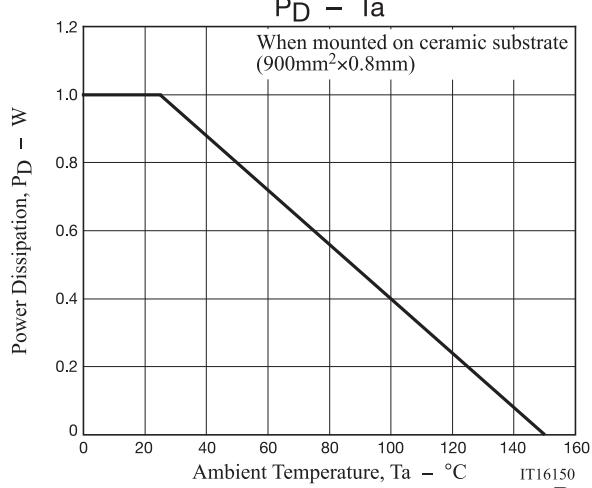
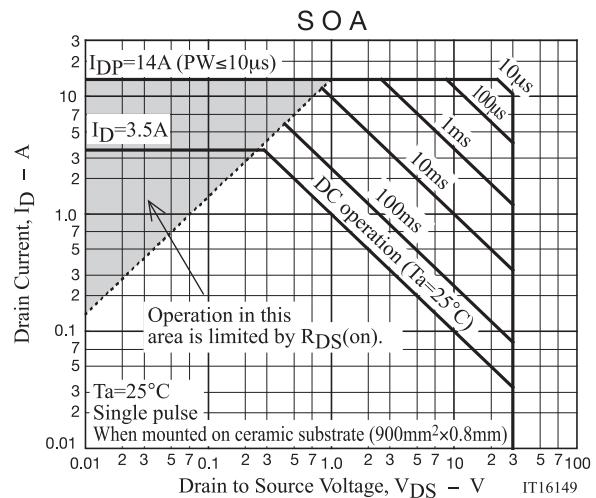
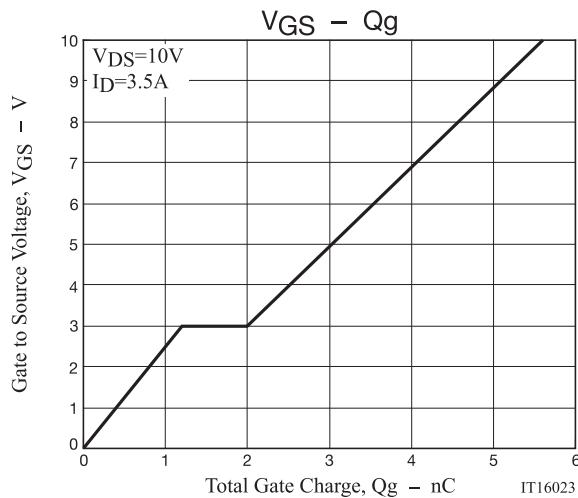
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V(\text{BR})\text{DSS}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$			1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}, V_{DS}=0\text{V}$			± 10	μA
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	1.2		2.6	V
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}, I_D=1.5\text{A}$		1.8		S
Static Drain to Source On-State Resistance	$R_{DS(\text{on})1}$	$I_D=1.5\text{A}, V_{GS}=10\text{V}$		55	72	$\text{m}\Omega$
	$R_{DS(\text{on})2}$	$I_D=1\text{A}, V_{GS}=4.5\text{V}$		78	110	$\text{m}\Omega$
	$R_{DS(\text{on})3}$	$I_D=1\text{A}, V_{GS}=4\text{V}$		91	128	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}, f=1\text{MHz}$		280		pF
Output Capacitance	C_{oss}			60		pF
Reverse Transfer Capacitance	C_{rss}			30		pF
Turn-ON Delay Time	$t_{\text{q(on)}}$	See specified Test Circuit		5.8		ns
Rise Time	t_r			8.0		ns
Turn-OFF Delay Time	$t_{\text{q(off)}}$			21		ns
Fall Time	t_f			9.7		ns
Total Gate Charge	Q_g	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=3.5\text{A}$		5.6		nC
Gate to Source Charge	Q_{gs}			1.2		nC
Gate to Drain "Miller" Charge	Q_{gd}			0.8		nC
Forward Diode Voltage	V_{SD}	$I_S=3.5\text{A}, V_{GS}=0\text{V}$		0.84	1.2	V

Note 2 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit



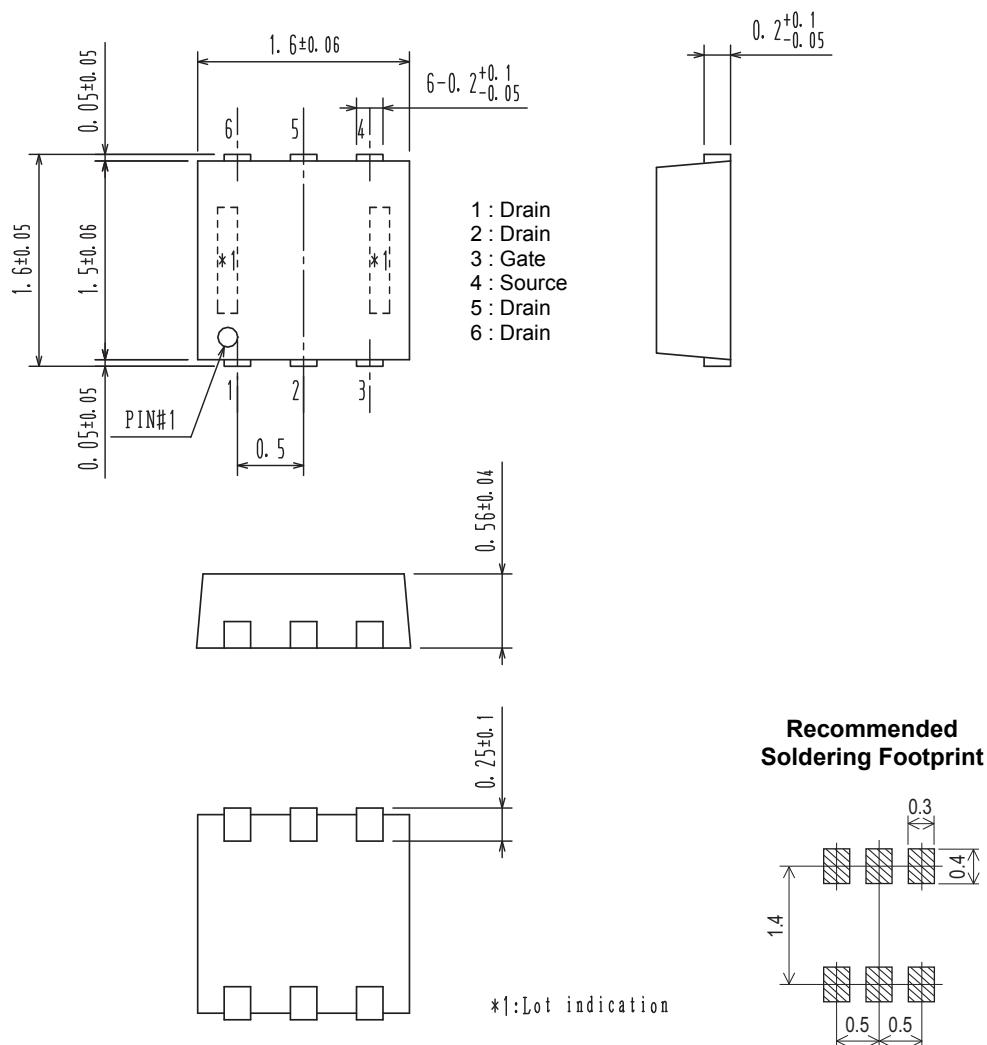




PACKAGE DIMENSIONS

unit : mm

SOT-563 / SCH6
CASE 463AB
ISSUE Q



ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)
SCH1439-TL-H	ZQ	SOT-563 / SCH6 (Pb-Free / Halogen Free)	5,000 / Tape & Reel
SCH1439-TL-W			

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D, http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF

Note on usage : Since the SCH1439 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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