

60V 0.85Ω N-channel MOSFET

Features

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge

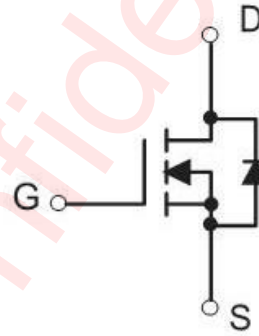
General Description

V_{DS}	$R_{DS(ON)}$ Typ.	I_D
60V	0.85Ω @ $V_{GS} = 10V$	0.34A
	0.95Ω @ $V_{GS} = 4.5V$	

Applications

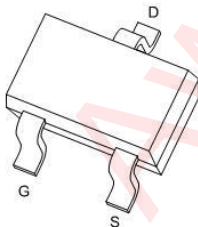
- Load Switch
- DC/DC Converter

Schematic diagram



Pin Configuration

SOT-523



Ordering Information

Part Number	Marking	Package	Environmental Information
AW406025NSTR	K72	SOT-523	RoHS+HF

Absolute Maximum Ratings

$T_A = T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-Continuous ($T_A=25^\circ\text{C}$) (NOTE 1,5)	0.34	A
I_{DM}	Drain Current-Pulsed (NOTE2)	1.0	A
P_D	Power Dissipation ($T_A=25^\circ\text{C}$) (NOTE 4,5)	0.25	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Steady State (NOTE 5)	500	$^\circ\text{C/W}$

NOTE1: The maximum current rating is limited by package

NOTE2: Pulse Test : Pulse Width $\leq 10\mu\text{s}$, duty cycle $\leq 1\%$

NOTE3: Pulse Test : Pulse Width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

NOTE4: The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$

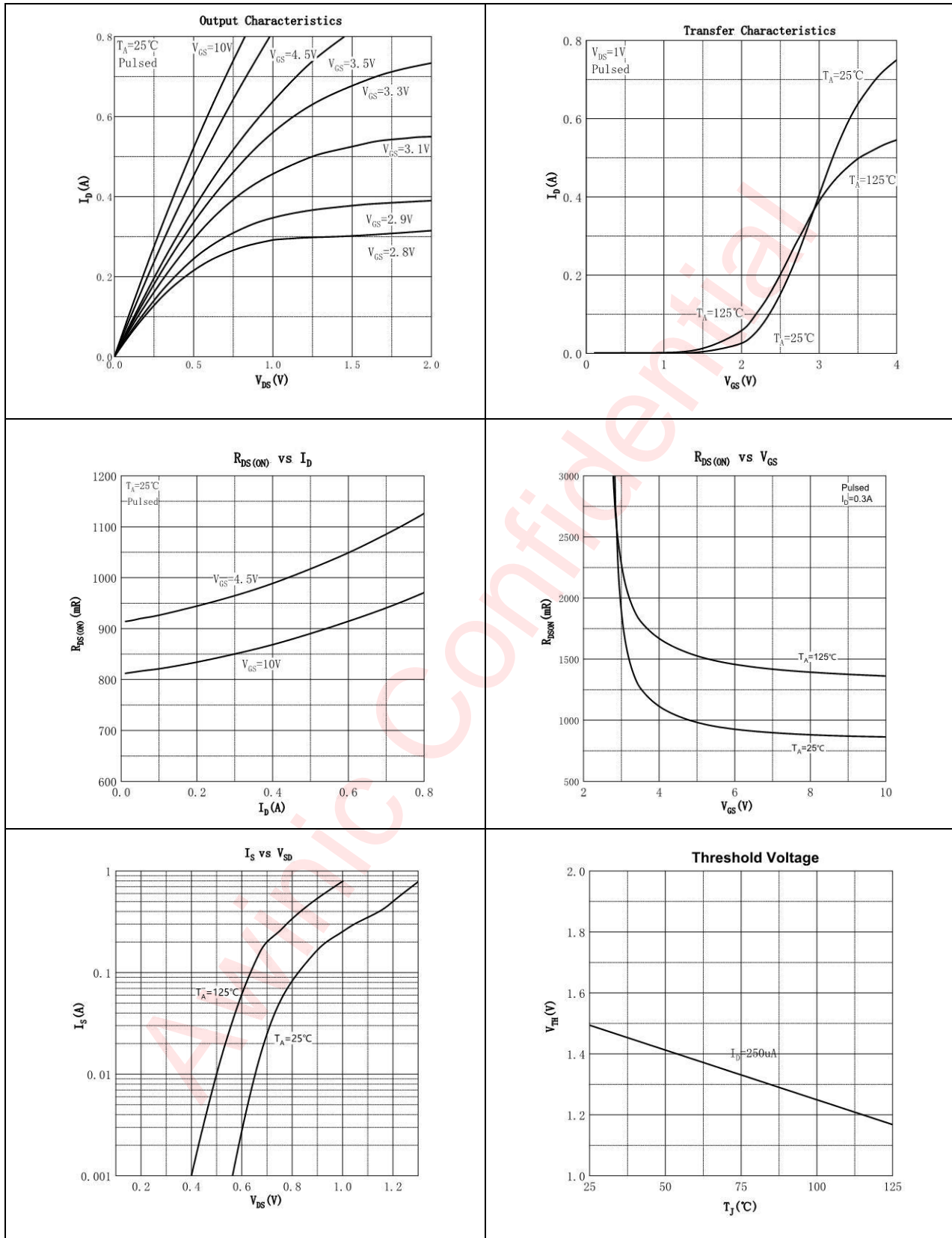
NOTE5: Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$

Electrical Characteristics

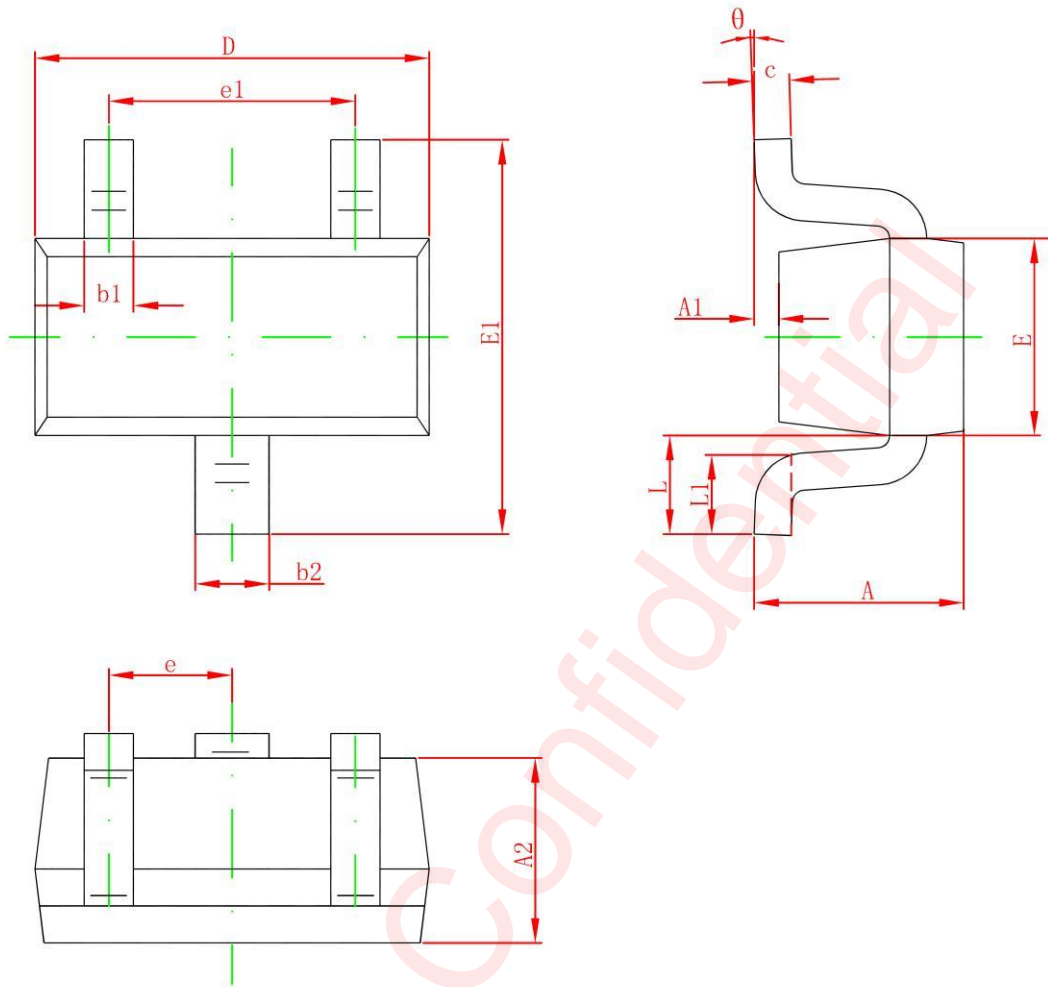
$T_A = T_J = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	60			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 48V, V_{GS} = 0V$			1	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 95	nA
$V_{GS(TH)}$	Gate Threshold Voltage ^(NOTE 3)	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.5	2.5	V
$R_{DS(ON)}$	Drain-Source On-state Resistance ^(NOTE 3)	$V_{GS} = 10V, I_D = 0.3A$		0.85	2.5	Ω
		$V_{GS} = 4.5V, I_D = 0.2A$		0.95	3.0	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = 30V, V_{GS} = 0V,$ $f = 1MHz$		34.8		pF
C_{oss}	Output Capacitance			6.4		
C_{rss}	Reverse Transfer Capacitance			3.5		
R_g	Gate Resistance	$V_{DS} = 0V, V_{GS} = 0V,$ $f = 1MHz$		40		Ω
Switching Characteristics						
Q_g	Total Gate Charge	$V_{DS} = 30V, I_D = 0.3A,$ $V_{GS} = 10V$		0.32		nC
Q_{gs}	Gate-Source Charge			0.25		
Q_{gd}	Gate-Drain Charge			0.17		
$t_{d(on)}$	Turn On Delay Time	$V_{DD} = 30V, V_{GS} = 10V,$ $R_L = 100\Omega, R_G = 3\Omega$		3.8		ns
t_r	Rise Time			2.9		
$t_{d(off)}$	Turn Off Delay Time			14		
t_f	Fall Time			8		
Source- Drain Diode Characteristics and Maximum Ratings						
V_{SD}	Diode Forward Voltage ^(NOTE 3)	$V_{GS} = 0V, I_S = 0.3A$			1.2	V

Electrical Characteristics Diagrams



Package Description



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e1	0.900	1.100	0.035	0.043
e	0.500TYP		0.020TYP	
L	0.400REF		0.016REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Revision History

Version	Date	Change Record
V1.0	Dec. 2023	Officially released

Awinic Confidential

Disclaimer

All trademarks are the property of their respective owners. Information in this document is believed to be accurate and reliable. However, Shanghai AWINIC Technology Co., Ltd (AWINIC Technology) does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

AWINIC Technology reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. Customers shall obtain the latest relevant information before placing orders and shall verify that such information is current and complete. This document supersedes and replaces all information supplied prior to the publication hereof.

AWINIC Technology products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an AWINIC Technology product can reasonably be expected to result in personal injury, death or severe property or environmental damage. AWINIC Technology accepts no liability for inclusion and/or use of AWINIC Technology products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications that are described herein for any of these products are for illustrative purposes only. AWINIC Technology makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

All products are sold subject to the general terms and conditions of commercial sale supplied at the time of order acknowledgement.

Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

Reproduction of AWINIC information in AWINIC data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. AWINIC is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of AWINIC components or services with statements different from or beyond the parameters stated by AWINIC for that component or service voids all express and any implied warranties for the associated AWINIC component or service and is an unfair and deceptive business practice. AWINIC is not responsible or liable for any such statements.