

60V N-Channel MOSFET

Features

- Split Gate Trench Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

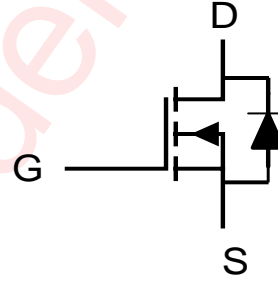
Applications

- Power Switching Application

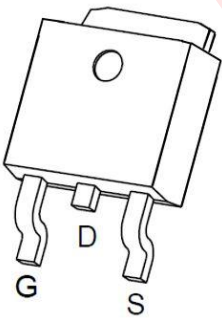
General Description

V_{DS}	$R_{DS(ON)}$ Typ.	I_D
60V	6.0 m Ω @ $V_{GS} = 10V$	80A

Schematic diagram



Pin Configuration



Ordering Information

Part Number	Marking	Package	Environmental Information
AWP406032NSTR	T060N06N	TO-252-2L	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
$I_D^{(NOTE 1)}$	Drain Current - Continuous ($T_C = 25^\circ\text{C}$)	80	A
	Drain Current - Continuous ($T_C = 100^\circ\text{C}$)	52	A
$I_{DM}^{(NOTE 2)}$	Drain Current - Pulsed	320	A
$I_{AS}^{(NOTE 3)}$	Single Pulsed Avalanche Current	20	A
$E_{AS}^{(NOTE 3)}$	Single Pulsed Avalanche Energy	100	mJ
$P_D^{(NOTE 5)}$	Power Dissipation ($T_C = 25^\circ\text{C}$)	78	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JA}^{(NOTE 6)}$	Thermal Resistance, Junction - to - Ambient Steady State	55	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance, Junction - to - Case Steady State	1.6	$^\circ\text{C/W}$

NOTE1: The maximum current rating is limited by package. And device mounted on a large heatsink

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

NOTE3: EAS condition: $V_{DD} = 30\text{V}$, $V_{GS} = 10\text{V}$, $L = 0.5\text{mH}$, $R_G = 25\Omega$ Starting $T_J = 25^\circ\text{C}$

NOTE4: Pulse Test : Pulse Width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

NOTE5: The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$. And device mounted on a large heatsink

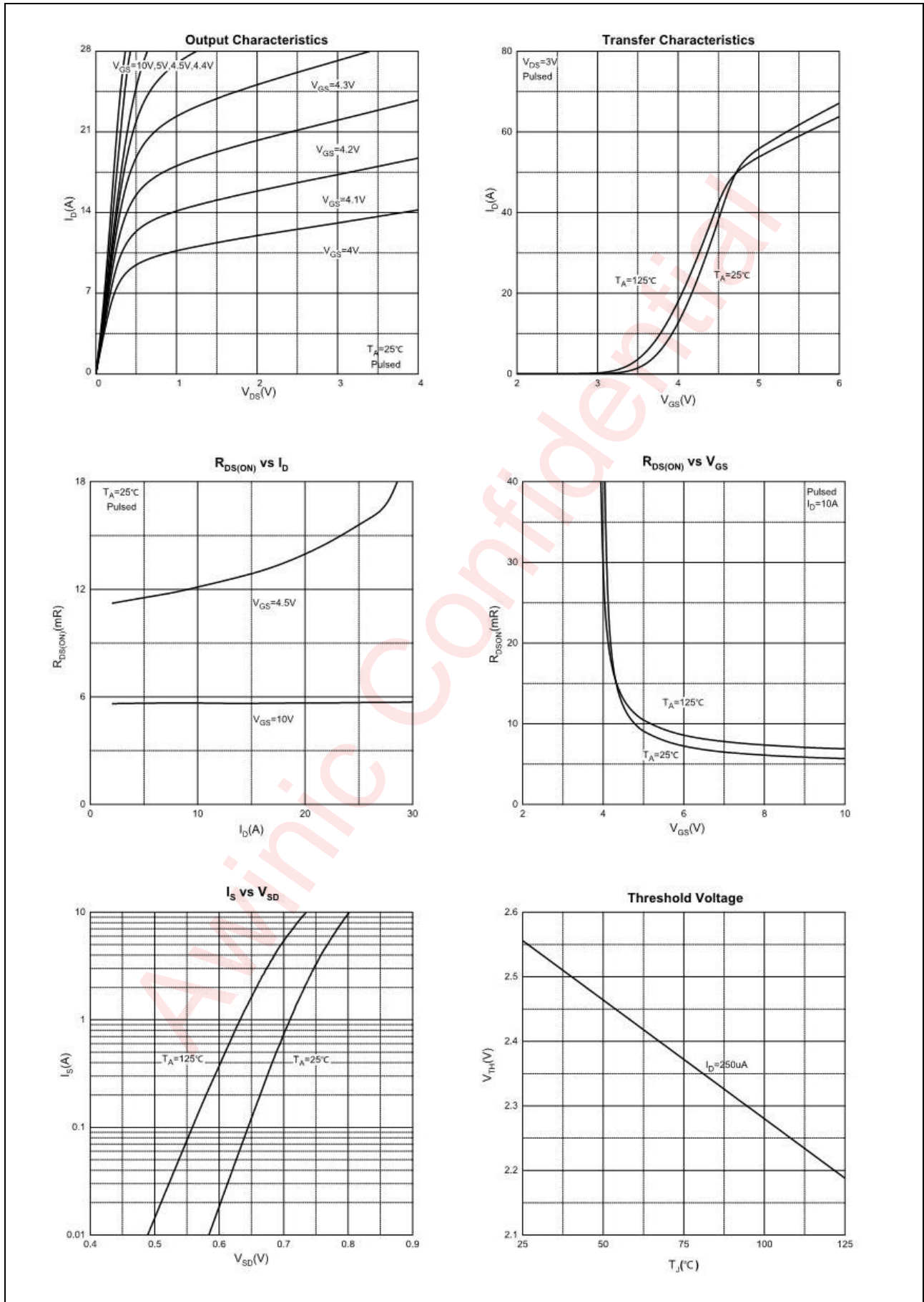
NOTE6: Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$

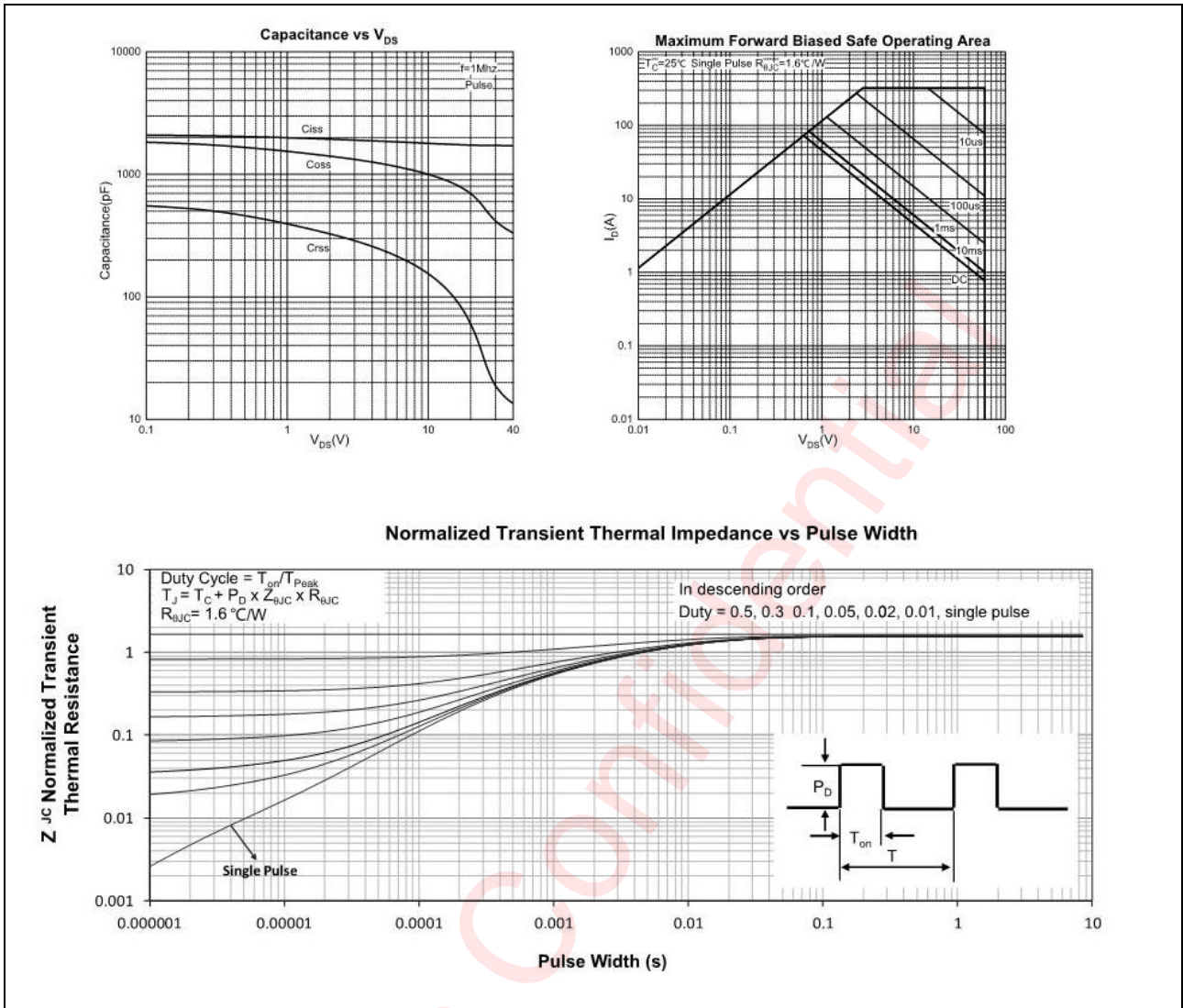
Electrical Characteristics

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

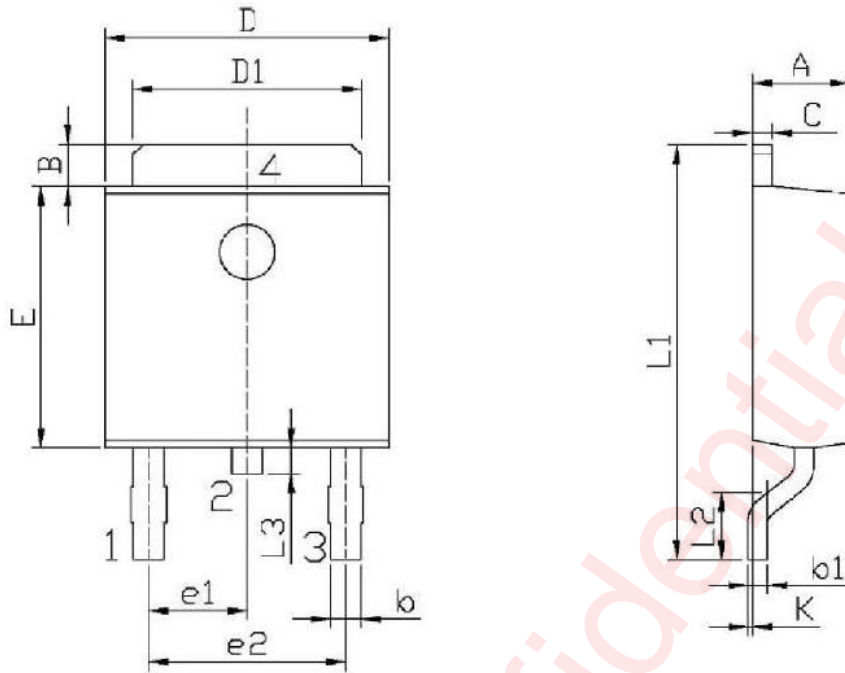
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	60			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics ^(NOTE 4)						
$V_{GS(TH)}$	Gate Threshold voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	2.6	4.0	V
$R_{DS(ON)}$	Drain-Source on-state resistance	$V_{GS} = 10V, I_D = 10A$		6.0	8.0	m Ω
Dynamic Characteristics						
C_{iss}	Input capacitance	$V_{DS} = 30V, V_{GS} = 0V,$ $f = 1MHz$		1721		pF
C_{oss}	Output capacitance			420		pF
C_{rss}	Reverse transfer capacitance			20		pF
R_g	Gate Resistance	$V_{DS} = 0V, V_{GS} = 0V,$ $f = 1MHz$		2.9		Ω
Switching Characteristics						
$t_{d(on)}$	Turn On Delay Time	$V_{DD} = 30V, V_{GS} = 10V,$ $R_G = 3\Omega, I_D = 20A$		10		ns
t_r	Rise Time			30		
$t_{d(off)}$	Turn Off Delay Time			35		
t_f	Fall Time			55		
Q_g	Total Gate Charge	$V_{DS} = 30V, I_D = 10A,$ $V_{GS} = 10V$		30		nC
Q_{gs}	Gate-Source Charge			6.7		nC
Q_{gd}	Gate-Drain Charge			7.5		nC
Source- Drain Diode Characteristics ^(NOTE 4)						
V_{SD}	Diode Forward Voltage	$V_{GS} = 0V, I_S = 10A$			1.2	V

Electrical Characteristics Diagrams





Package Description



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
B	0.950	1.250	0.037	0.049
b	0.500	0.700	0.020	0.028
b1	0.450	0.550	0.018	0.022
C	0.450	0.550	0.018	0.022
D	6.450	6.750	0.254	0.266
D1	5.100	5.500	0.201	0.217
E	5.950	6.250	0.234	0.246
e1	2.240	2.340	0.088	0.092
e2	4.430	4.730	0.174	0.186
L1	9.450	9.950	0.372	0.392
L2	1.250	1.750	0.049	0.069
L3	0.600	0.900	0.024	0.035
K	0.000	0.100	0.000	0.004

Revision History

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

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