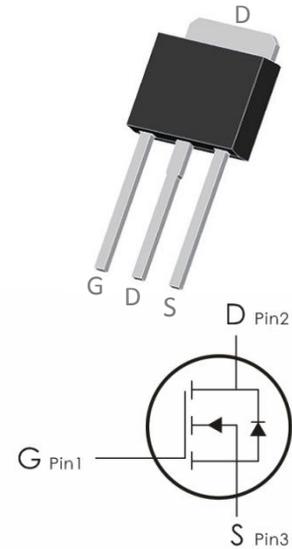


Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=100V, I_D=15A, R_{DS(ON)}<90m\ \Omega$ @ $V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
UH090NG-S	H090N-S	TO- 251	80 pcs/Tube

Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	15	A
I_{DM}	Pulsed Drain Current ¹	60	
P_D	Power Dissipation	46	W
E_{AS}	Single pulse avalanche energy ²	20	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.7	$^\circ\text{C}/\text{W}$

Electrical Characteristics: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=100V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1.2	1.8	2.4	V
$R_{DS(on)}$	Drain-Source On Resistance ³	$V_{GS}=10V, I_D=7A$	---	75	90	$\text{m}\Omega$
		$V_{GS}=4.5V, I_D=5A$	---	82	110	$\text{m}\Omega$
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	1029	---	pF
C_{oss}	Output Capacitance		---	54	--	
C_{rss}	Reverse Transfer Capacitance		---	43	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=50V, I_D=10A,$ $R_{ENG}=3\ \Omega, V_{GS}=10V$	---	13	---	ns
t_r	Rise Time		---	5.7	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	29	---	ns
t_f	Fall Time		---	5.4	---	ns
Q_{gs}	Total Gate Charge		$V_{GS}=10V, V_{DS}=50V,$ $I_D=10A$	---	22	---
Q_{gd}	Gate-Source Charge	---		3.15	---	nc
Q_g	Gate-Drain "Miller" Charge	---		5.7	---	nc
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=15A$	---	---	1.2	V
I_S	Continuous Drain Current	$V_D=V_G=0V$	---	---	15	A
I_{SM}	Pulsed Drain Current		---	---	60	A
T_{rr}	Reverse Recovery Time	$I_F=10A, T_J=25^\circ\text{C}$	---	30	---	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100A/\mu\text{s}$	---	42	---	nc

Notes:

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2.EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=-40\text{V}$, $V_G=-10\text{V}$, $R_g=25\Omega$, $L=0.5\text{mH}$.
- 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Characteristics: ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

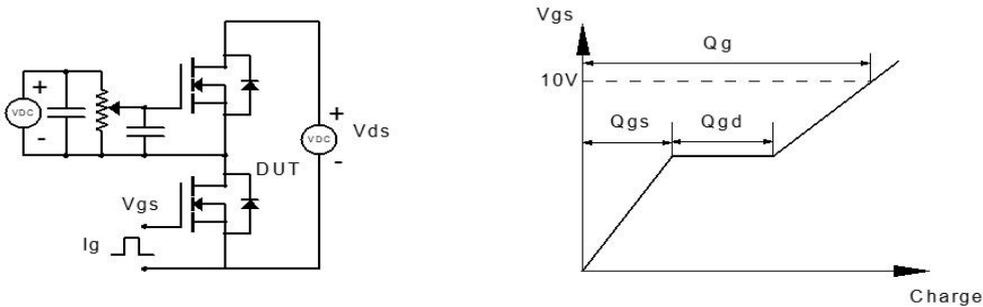


Figure 1: Gate Charge Test Circuit & Waveform

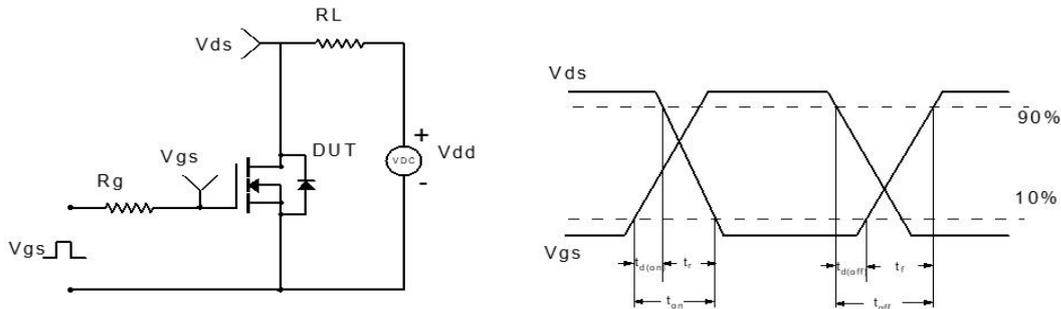


Figure 2: Resistive Switching Test Circuit & Waveform

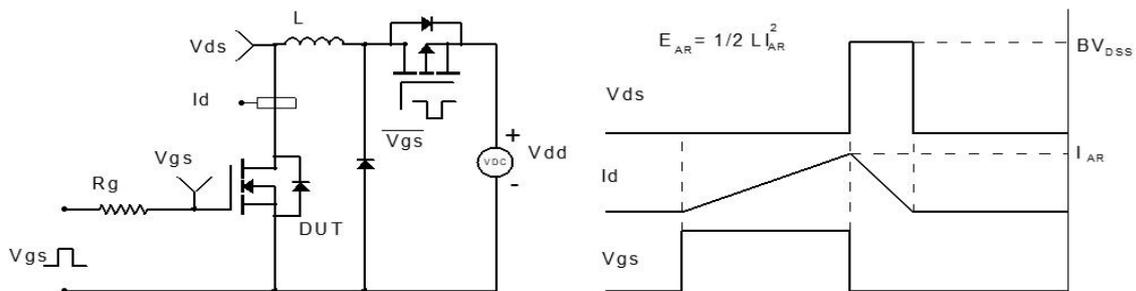


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

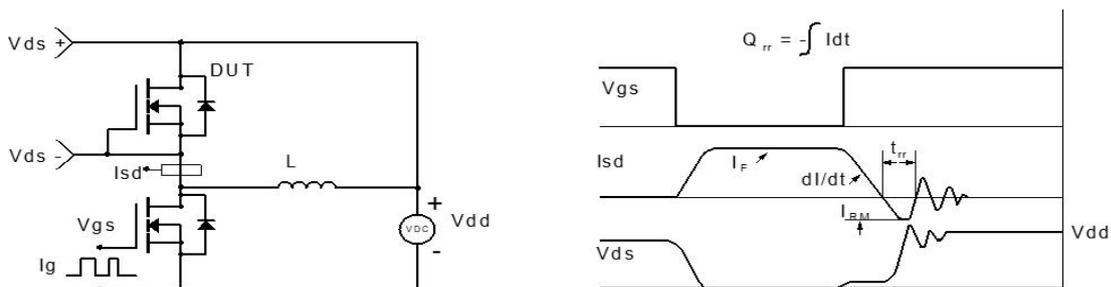
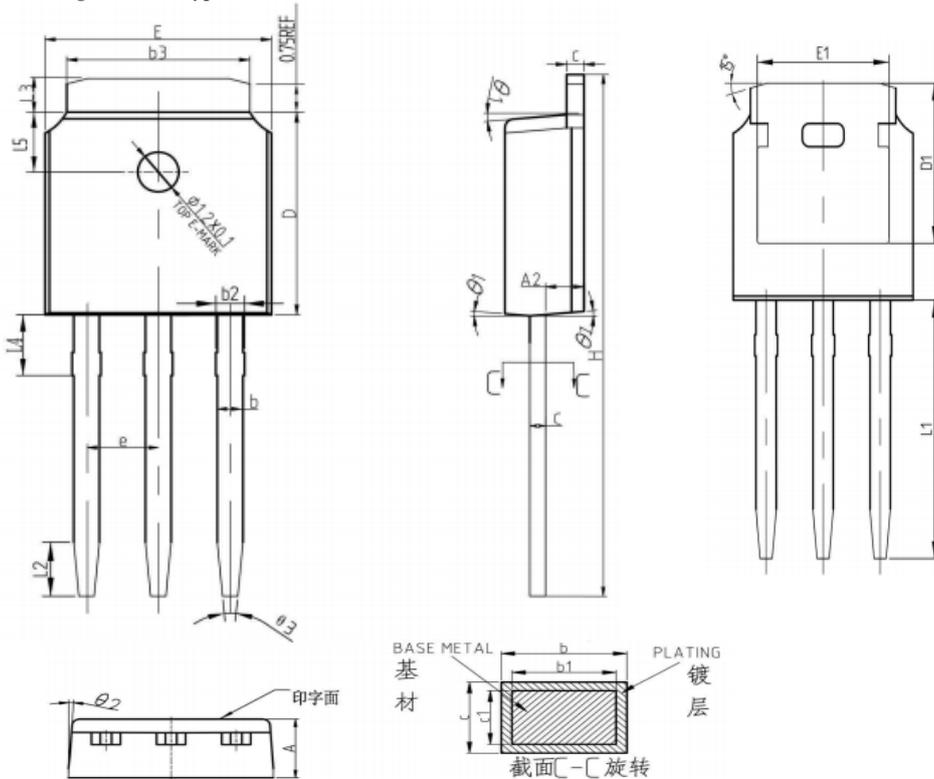


Figure 4: Diode Recovery Test Circuit & Waveform

TO-251 Package Information

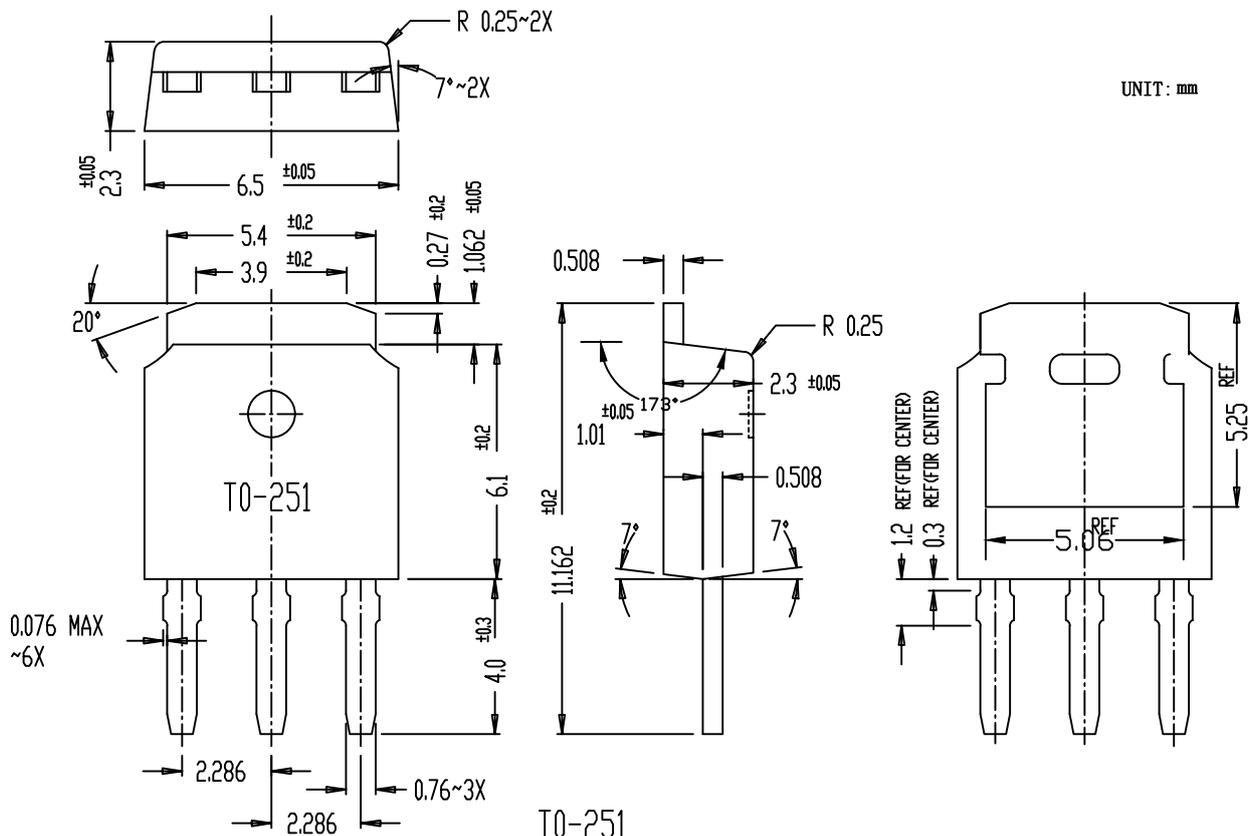
Package Outline Type-A



SYMBOL	mm		
	MIN	NOM	MAX
*A	2.20	2.30	2.38
*A2	0.97	1.07	1.17
*b	0.72	0.78	0.85
b1	0.71	0.76	0.81
*b2	0.72	0.88	0.95
*b3	5.23	5.33	5.46
*c	0.47	0.53	0.58
c1	0.46	0.51	0.56
*D	6.00	6.10	6.20
D1	5.30REF		
*E	6.50	6.60	6.70
E1	4.70	4.83	4.92
*e	2.286BSC		
*H	16.10	16.40	16.60
*L1	9.20	9.40	9.60
L2	1.25	1.35	1.45
*L3	0.90	1.02	1.22
L4	0.95	1.05	1.15
L5	1.70	1.80	1.90
θ 1	5°	7°	9°
θ 2	5°	7°	9°
θ 3	11°	13°	15°

带*为检验尺寸

Package Outline Type-B



T0-251

Marking Information:

①. Doingter LOGO

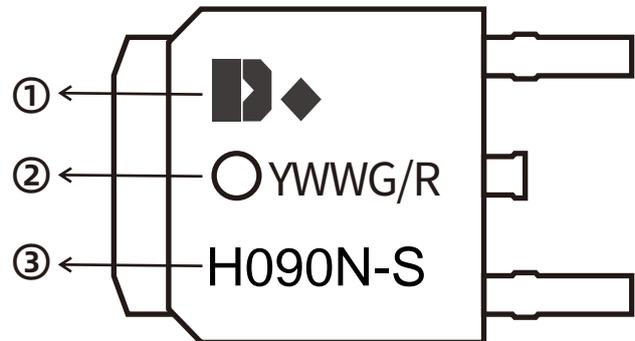
②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)

③. Part NO.

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