HL8205TS

DUAL N-CHANNEL MOSFET

R+O 宏嘉诚科技
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TSSOP-8 Plastic-Encapsulate MOSFETS

● Features

- V_{DS}=20V
- I_D=6A
- $R_{DS(on)}@V_{GS}$=4.5V < 27mΩ
- $R_{DS(on)}@V_{GS}$=2.5V < 37mΩ
- Low Gate Charge
- Excellent CdV/dt effect decline

● Applications

- Battery Protection
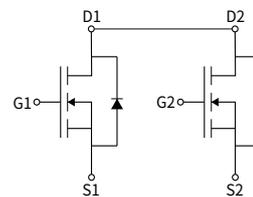- Load Switch
- Uninterruptible Power Supply

● Mechanical Data

- Case: TSSOP-8
  Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Drain-source Voltage
20 V
Drain Current
6 Ampere

TSSOP-8

● Function Diagram

● Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	CARTON(pcs)	DELIVERY MODE
TSSOP-8	R3	0.077	5000	100000	13''

● Maximum Ratings (Ta=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	20
Gate-source Voltage	V_{GS}	V	±12
Drain Current	I_D	A	6
Pulsed Drain Current [1]	I_{DM}	A	25
Total Power Dissipation	P_D	W	1.5
Junction temperature	T_J	℃	-55 ~+150
Storage temperature	T_{stg}	℃	-55~+150
Thermal Resistance Junction-to-Ambient [2]	$R_{\theta JA}$	℃ / W	83

● Static Parameter Characteristics (Tj=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$, $I_D=250\mu A$	V	20	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V$, $V_{GS}=0V$	µA	—	—	1.0
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm10V$, $V_{DS}=0V$	nA	—	—	±100
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	V	0.5	0.7	1.2
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V$, $I_D=4.5A$	mΩ	—	21	27
		$V_{GS}=2.5V$, $I_D=3.5A$		—	27	37

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=8V$, $V_{GS}=0V$, f=1MHZ	pF	—	600	—
Output Capacitance	C_{oss}			—	330	—
Reverse Transfer Capacitance	C_{rss}			—	140	—

● Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=4.5V$, $V_{DD}=10V$, $I_D=1A$, $R_{GEN}=6\Omega$	nS	—	10	—
Turn-on Rise Time	t_r		nS	—	11	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	35	—
Turn-off fall Time	t_f		nS	—	30	—
Total Gate Charge	Q_g	$V_{DS}=10V$, $I_D=6A$, $V_{GS}=4.5V$	nC	—	10	—
Gate-Source Charge	Q_{gs}		nC	—	2.3	—
Gate-Drain Charge	Q_{gd}		nC	—	1.5	—

● Drian-Source Diode Characteristics

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage [3]	V_{SD}	$I_S=6A$, $V_{GS}=0V$	V	—	—	1.2
Maximum Body-Diode Continuous Current [2]	I_S	—	A	—	—	6

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)Surface Mounted on FR4 Board,t ≤ 10sec.
(3)Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.
(4)Guaranteed by design,not subject to production.

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● Ratings And Characteristics Curves (Ta=25℃ Unless otherwise specified)
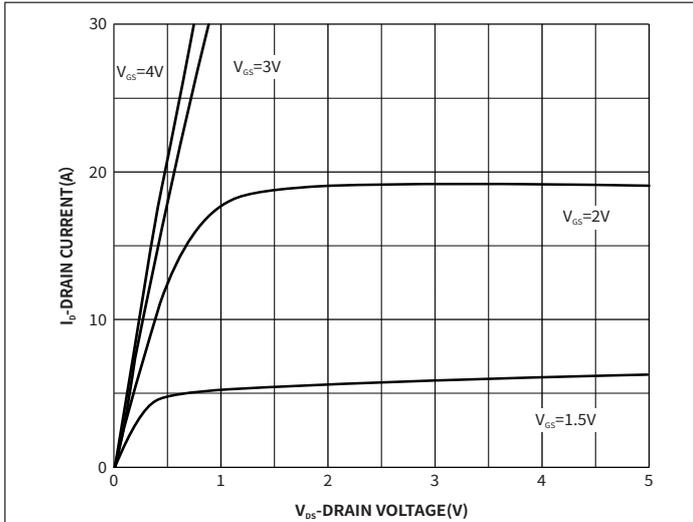

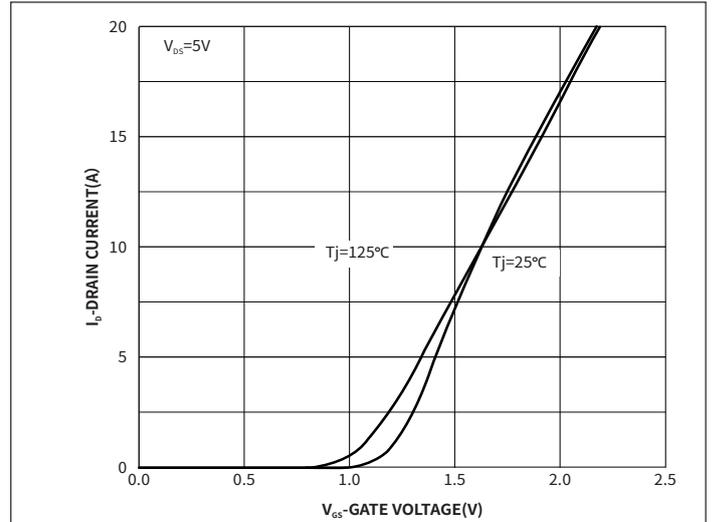Fig.1 Output Characteristics

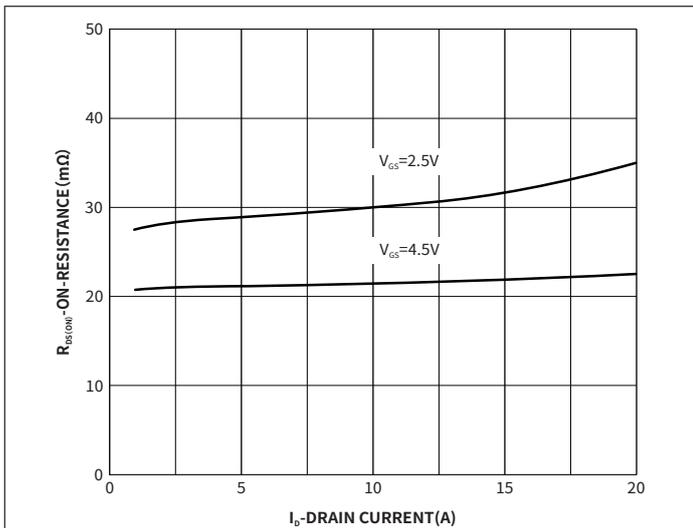Fig.2 Transfer Characteristics

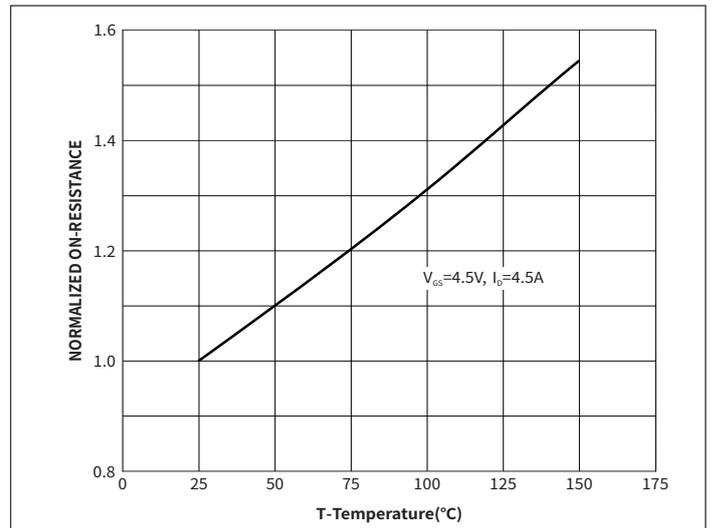Fig.3 On-Resistance vs. Drain Current and Gate Voltage
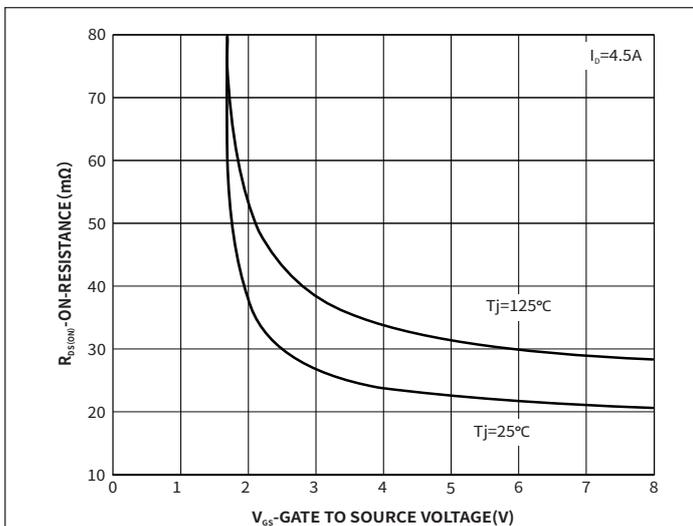

Fig.4 On-Resistance vs. Junction Temperature
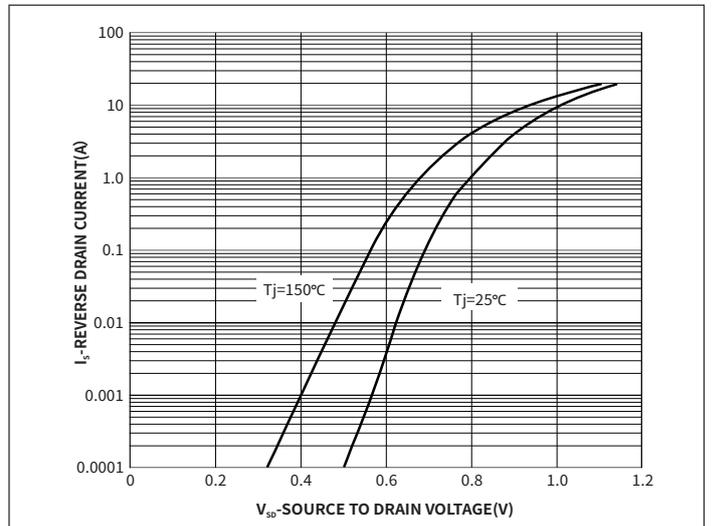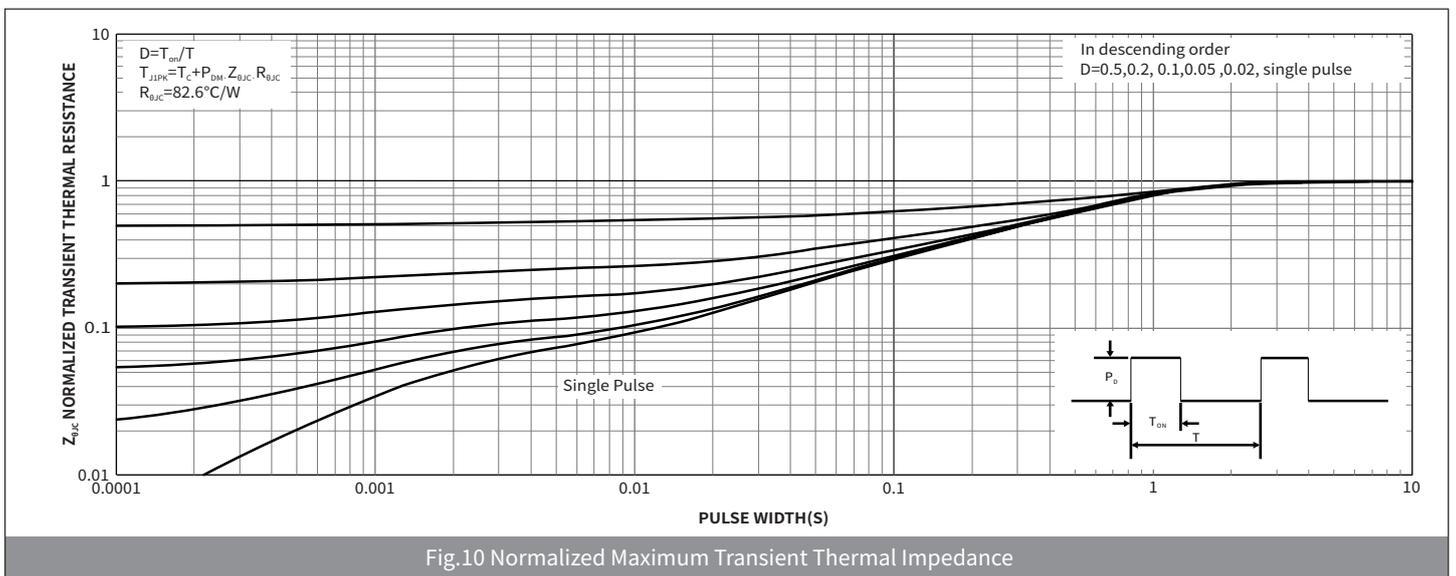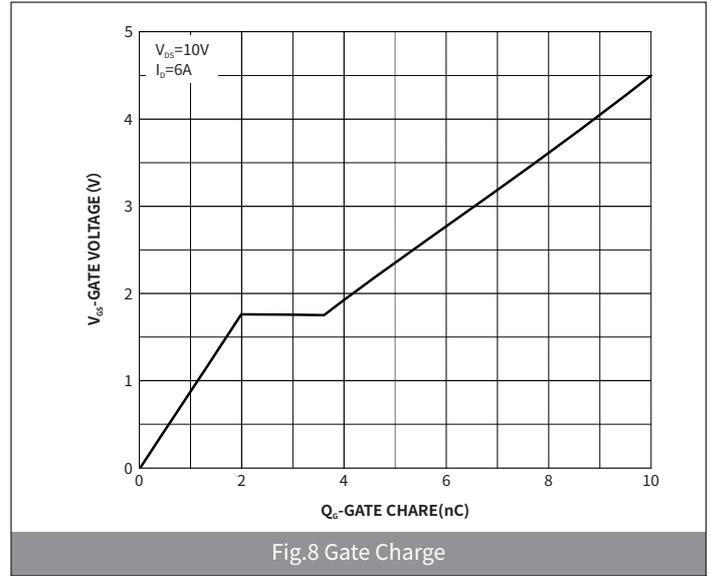

Fig.5 On-Resistance vs. Gate to Source Voltage

Fig.6 Typical Body-Diode Forward Characteristics

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Fig.7 Capacitance Characteristics

Fig.8 Gate Charge

Fig.9 Safe Operation Area

Fig.10 Normalized Maximum Transient Thermal Impedance

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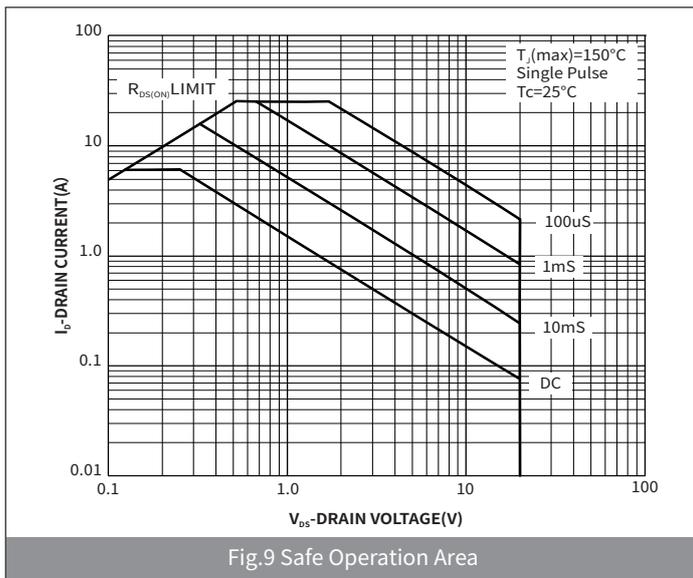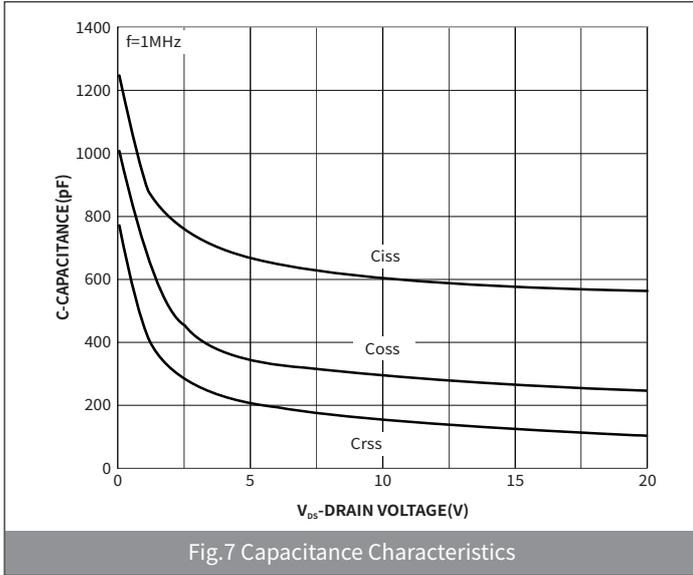
● Package Outline Dimensions (TSSOP-8)

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	—	1.20	—	0.047
A1	0.05	0.15	0.002	0.006
A2	0.80	1.00	0.031	0.039
A3	0.35	0.41	0.014	0.016
b	0.19	0.30	0.007	0.012
c	0.09	0.20	0.004	0.008
D	2.90	3.10	0.114	0.122
E	6.25	6.55	0.246	0.258
E1	4.30	4.50	0.169	0.177
e	0.65 BSC		0.026 BSC	
L	0.95	1.05	0.037	0.041
L1	0.50	0.70	0.020	0.028
θ	1°	7°	1°	7°

● Suggested Pad Layout

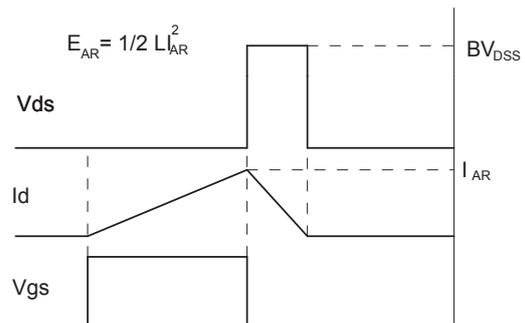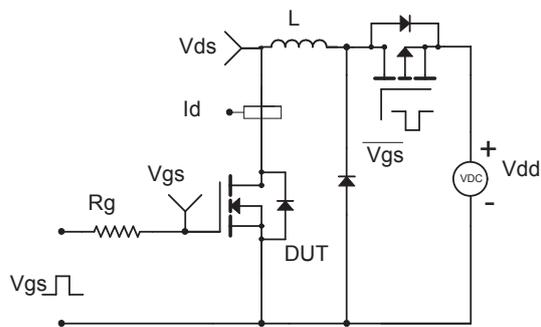| Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	1.016	—	0.040	—
K	0.305	—	0.012	—
N	6.655	—	0.262	—
M	4.623	—	0.182	—
X	2.337	—	0.092	—
X1	0.356	—	0.014	—
Y	0.660	—	0.026	—

1.Gate Charge Test Circuit & Waveforms
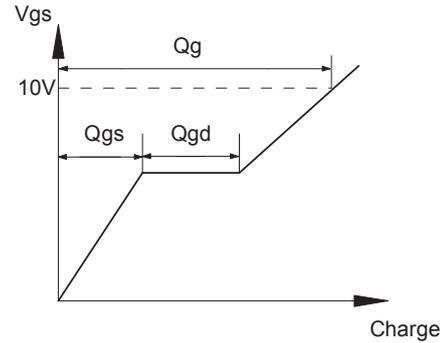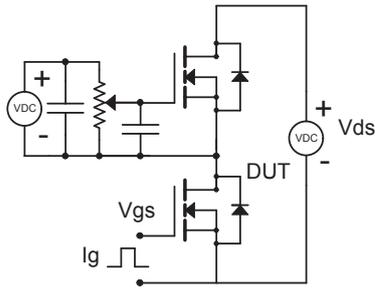
2. Resistive Switching Test Circuit & Waveforms
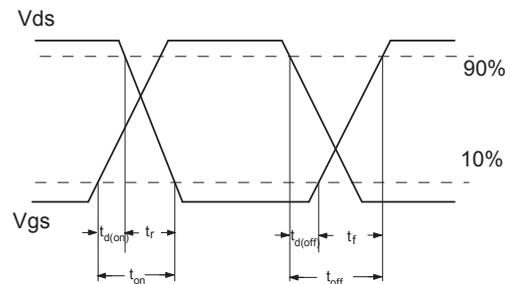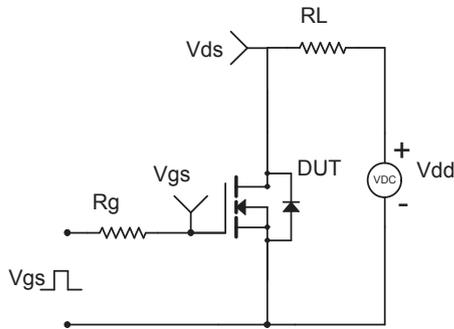
3.Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

$$E_{AR}= 1/2\ LI_{AR}^{2}$$

4.Diode Recovery Test Circuit & Waveforms

$$Q_{rr} = -\int Idt$$