



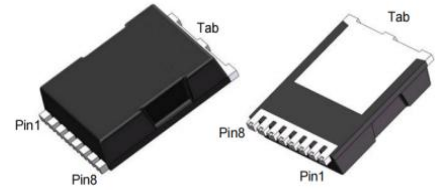
1. Features

- V_{DS} 200V
- I_D (at $V_{GS}=10V$) 110A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $9.3m\Omega(Typ)$

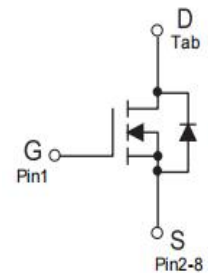
2. Mechanical Data

- Case:Molded Plastic,TOLL .
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable perMIL-STD-750,Method-2026.
- Marking:marked on body
- Mounting Position : 2010S.

TOLL



Pin1 Gate
Pin2-8 Source
Tab Drain



3. Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Parameter		Symbol	Value	UNIT
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C = 25^\circ C$	I_D	110	A
	$T_C = 100^\circ C$		66	
Drain Current-Pulsed		$I_{D\ pulse}$	440	A
Power Dissipation		P_{tot}	357	W
Avalanche Energy, Single Pulsed ⁽¹⁾		E_{AS}	1531	mJ
Junction and Storage Temperature Range		T_J, T_{STG}	-55~ +150	°C
Thermal Resistance from Junction to Lead		$R_{\theta JC}$	0.35	°C/W
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	62.5	°C/W

**4. Electrical Characteristics**

Rating at 25°C ambient temperature unless otherwise specified.

Characteristics	Symbol	Test conditions	Min	TYP	Max	Unit
Static Characteristics						
Drain -Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250mA$	200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=200V, V_{GS}=0V$	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250uA$	2.4	3.0	3.6	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$	-	9.3	12.1	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=100V$ $V_{GS}=0V$ $f=1MHz$	-	5080	-	pF
Output Capacitance	C_{oss}		-	380	-	
Reverse Transfer Capacitance	C_{rss}		-	10	-	
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=100V, V_{GS}=10V$ $I_D=50A, R_G=2.7\Omega$	-	23	-	ns
Turn-on Rise Time	t_r		-	46	-	
Turn-off Delay Time	$t_{d(off)}$		-	63	-	
Turn-off Fall Time	t_f		-	20	-	
Total Gate Charge	Q_g	$V_{DS}=100V, V_{GS}=10V$ $I_D=50A$	-	78	-	nC
Gate-Source Charge	Q_{gs}		-	25	-	
Gate-Drain Charge	Q_{gd}		-	11	-	
Drain-Source Diode Characterist						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=30A$	-	-	1.2	V
Reverse Recovery Time	T_{rr}	$V_{GS}=100V, I_{SD}=50A,$	-	130	-	ns
Reverse Recovery Charge	Q_{rr}	$di/dt=100A/\mu s$	-	670	-	nC

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, V_{GS}=10V, L=10mH, I_{AS}=17.5A$, Starting $T_J=25^\circ C$
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature



5. Rating And Characteristic Curves

Fig.1 Output Characteristics

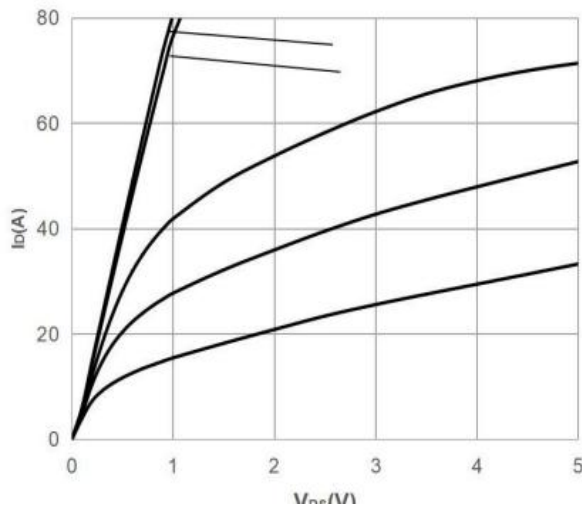


Fig.2 Typical Transfer Characteristics

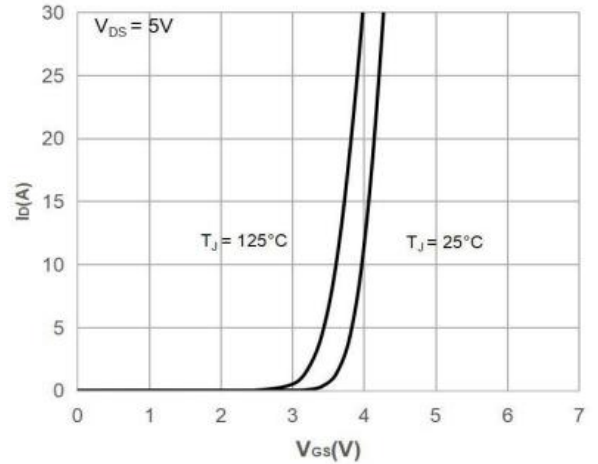


Fig.3 On-resistance vs. Drain Current

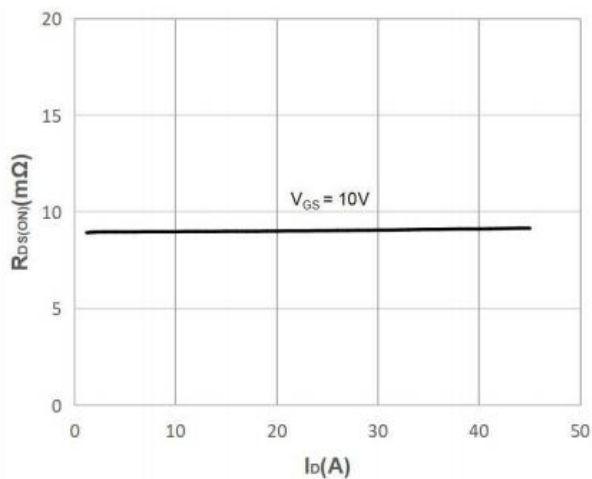


Fig.4 Body Diode Characteristics

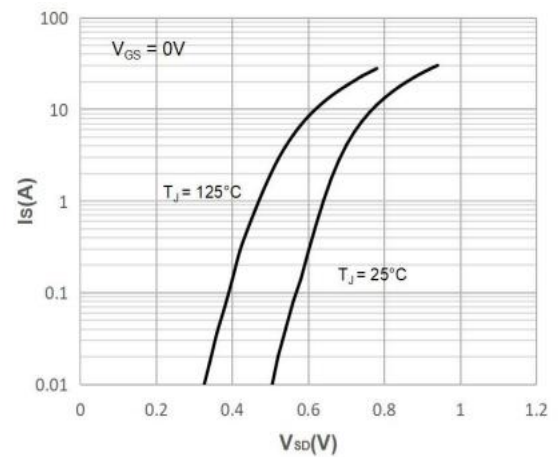


Fig.5 Gate Charge Characteristics

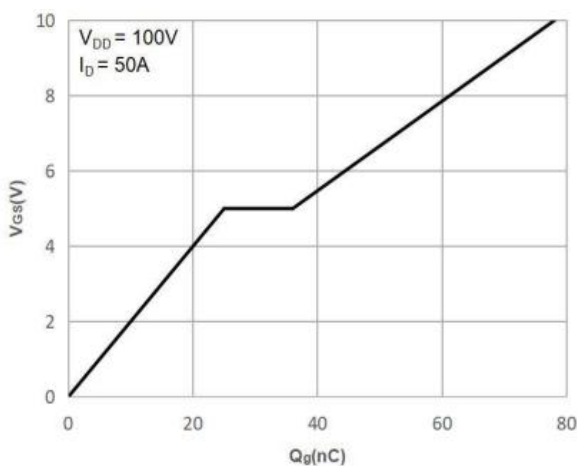


Fig.6 Capacitance Characteristics

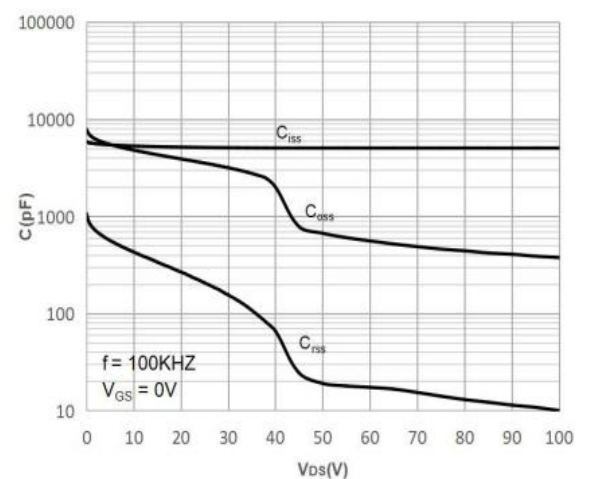




Fig.7 Normalized Breakdown voltage vs.Junction Temperature

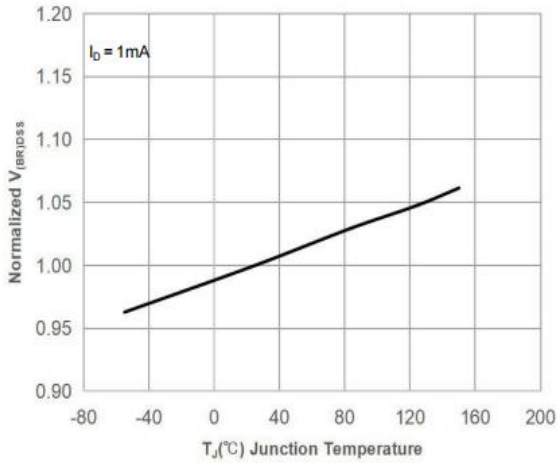


Fig.8 Normalized on Resistance vs.Junction Temperature

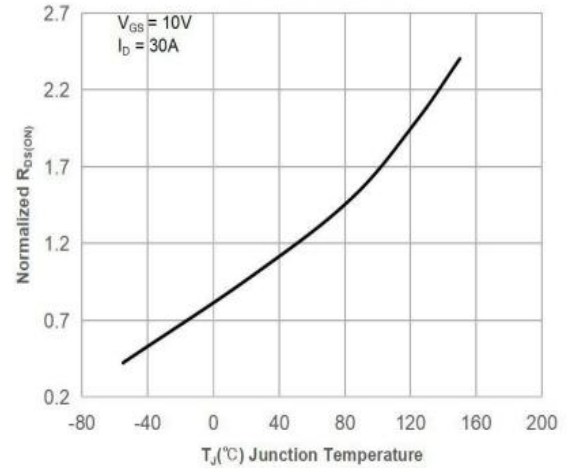


Fig.9 Maximum Safe Operating Area

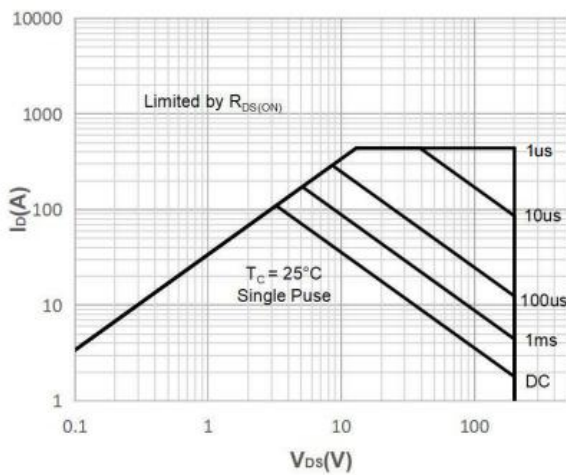


Fig.10 Maximum Continuous Drain Current vs. Case

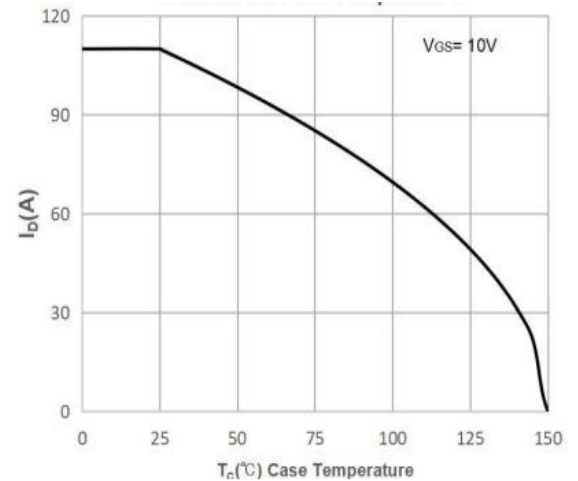


Fig.11 Normalized Maximum Transient Thermal Impedance

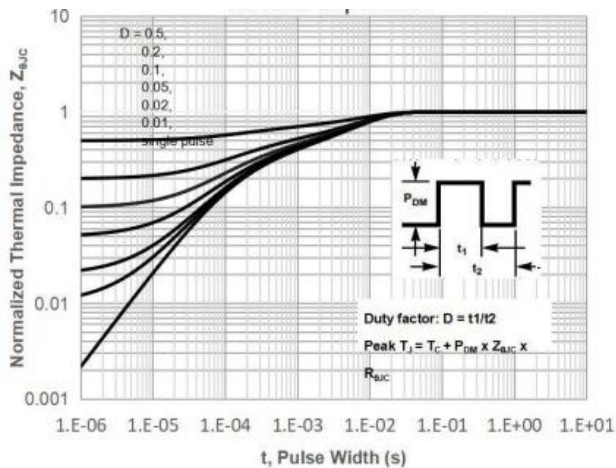
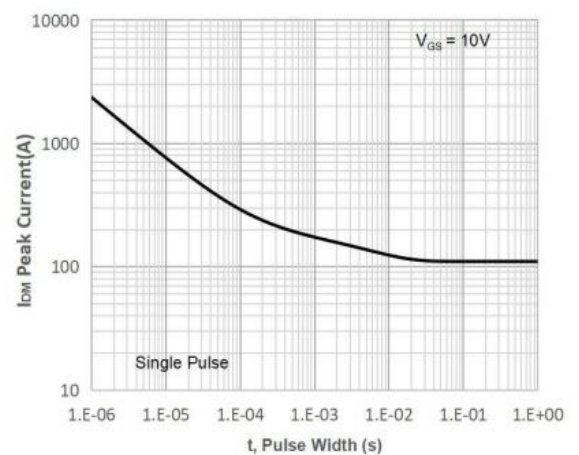


Fig.12 Peak Current Capacity





6. Test Circuit & Waveform

Test Circuit

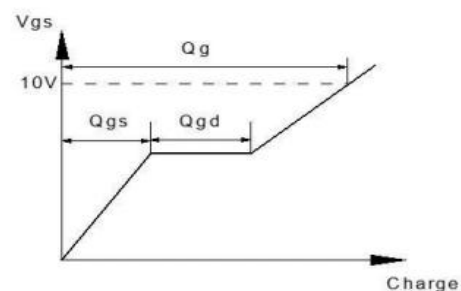
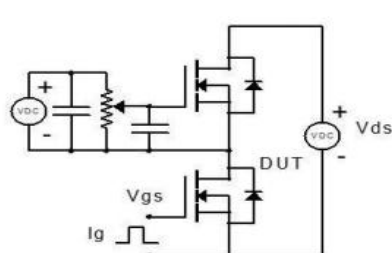


Figure 1: Gate Charge Test Circuit & Waveform

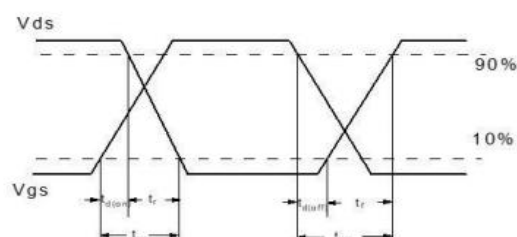
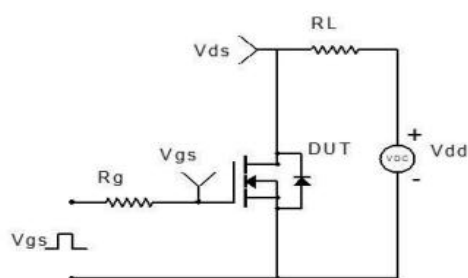


Figure 2: Resistive Switching Test Circuit & Waveform

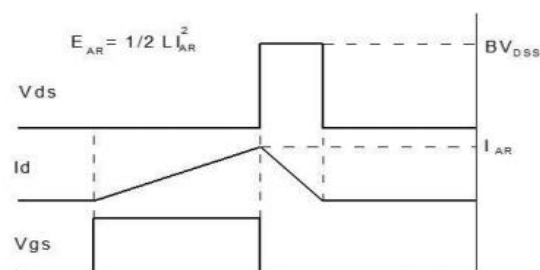
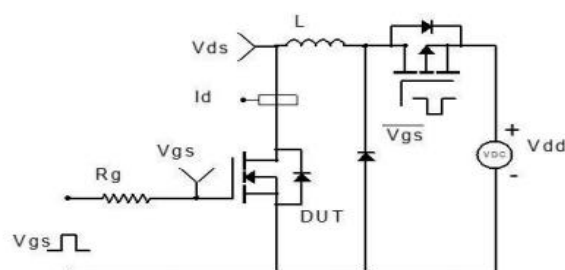


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

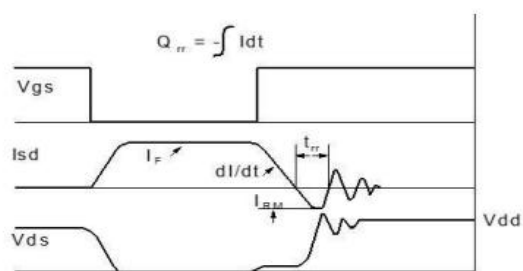
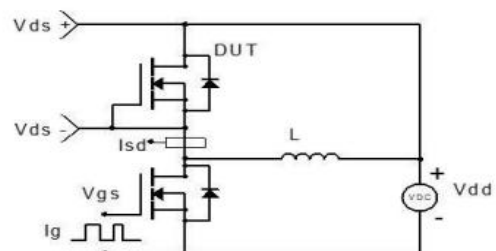
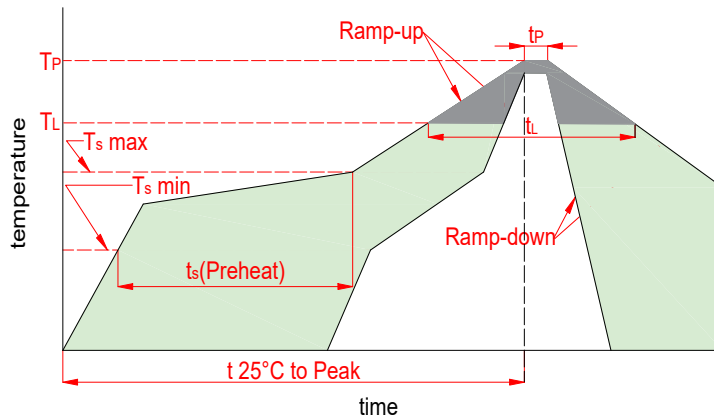


Figure 4: Diode Recovery Test Circuit & Waveform

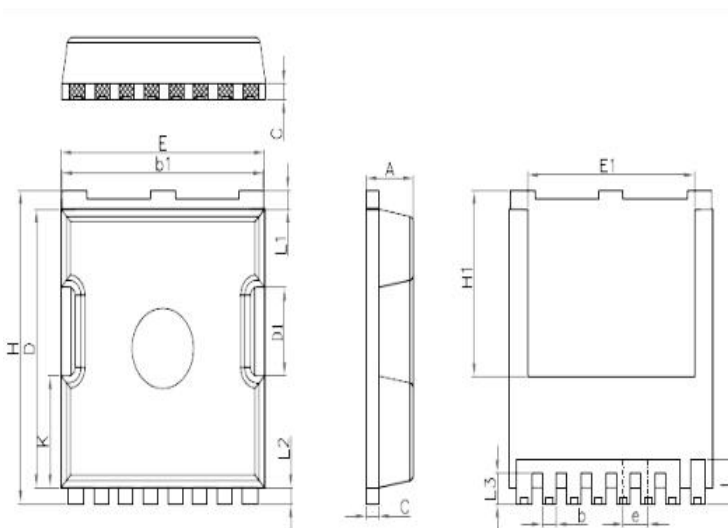


7. Soldering Parameters



Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150℃
	Temp. max(T_s (min))	200℃
	Time(min to max)(t_s)	60~180s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3℃/s max
T_s (max) to T_L -Ramp-up Rate		3℃/s max
Reflow	Temp. (T_L)(Liquidus)	217℃
	Temp. (t_L)(Liquidus)	60~150s
Peak Temp. (T_P)		260 ^{+0/-5} ℃
Time within actual peak Temp. (t_p)		30s max
Ramp-down Rate		6℃/s max
Time 25℃ to peak Tempe. (T_P)		8 minutes max
Do not exceed		260℃

8. Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.087	0.094	2.20	2.40
b	0.024	0.031	0.60	0.80
b1	0.382	0.390	9.70	9.90
C	0.016	0.024	0.40	0.60
D	0.407	0.411	10.35	10.45
D1	0.126	0.134	3.20	3.40
e	0.043	0.051	1.10	1.30
H	0.457	0.465	11.60	11.80
L1	0.024	0.031	0.60	0.80
L2	0.020	0.028	0.50	0.70

9. Package Information

Package	Quantity(pcs)
TOLL	2000



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