

100V, 1.1m Ω , 340A N-Channel MOSFET

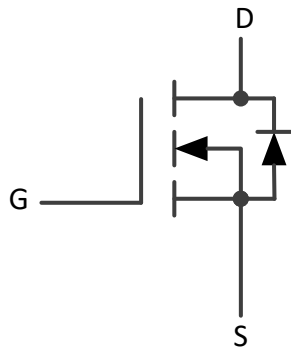
Features

- ✧ Extremely low on-resistance $R_{DS(on)}$
- ✧ Excellent $Q_g \times R_{DS(on)}$ product(FOM)
- ✧ Rugged and reliable
- ✧ 100% Avalanche Tested

V_{DS} (V)	Typical $R_{DS(on)}$ (m Ω)
100	1.1 @ $V_{GS}=10V$

Applications

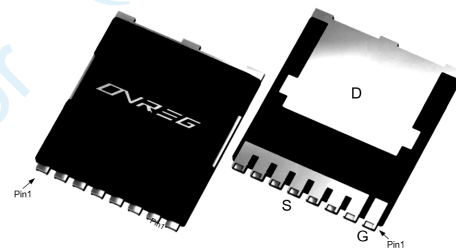
- ✧ Motor control and drive
- ✧ UPS
- ✧ Battery management System



Circuit Diagram

Mechanical Data

- ✧ Reel Size : 13 inch
- ✧ RoHS/WEEE Compliant



TOLL-8L

Absolute Maximum Rating at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	340	A
		214	
Pulsed drain current ($T_C = 25^\circ\text{C}$, tp limited by T_j max)	I_{DM}	1200	A
Avalanche energy, single pulse(Note1)	E_{AS}	781	mJ
Power dissipation ($T_C = 25^\circ\text{C}$)	P_D	278	W
Junction Temperature and Storage Temperature	T_j, T_{STG}	-55~ +150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Min.	Typ.	Max.	Units
Thermal resistance, junction - case	$R_{\theta JC}$	-	-	0.45	$^{\circ}\text{C/W}$
Thermal resistance, junction - ambient(Note2)	$R_{\theta JA}$	-	-	45	$^{\circ}\text{C/W}$

Electrical Characteristics at $T_A = 25^{\circ}\text{C}$, unless otherwise specified

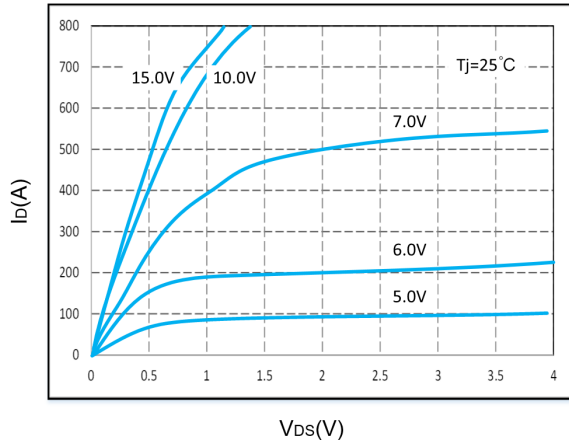
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	100	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$	-	-	1	μA
		$T_J = 125^{\circ}C$	-	-	100	μA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	3.0	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 100A$	-	1.1	1.3	m Ω
Gate resistance	R_G	F=1MHZ, Open Drain	-	4	-	Ω
Dynamic characteristics(Note3)						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	13810	-	pF
Output Capacitance	C_{oss}		-	5335	-	
Reverse Transfer Capacitance	C_{rss}		-	282	-	
Turn-on delay time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=50V, R_G=4.0\Omega$	-	46	-	ns
Rise time	t_r		-	110	-	
Turn-off delay time	$t_{d(off)}$		-	115	-	
Fall time	t_f		-	147	-	
Gate Total Charge	Q_G	$V_{GS} = 10V, V_{DS}=50V, I_D=100A$	-	220	-	nC
Gate-Source charge	Q_{GS}		-	72	-	
Gate-Drain charge	Q_{GD}		-	55	-	
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=100A$	-	0.85	1.2	V
Reverse Recovery Time	t_{rr}	$I_F=100A$	-	83	-	ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=100A/\mu s$	-	153	-	nC

Notes:

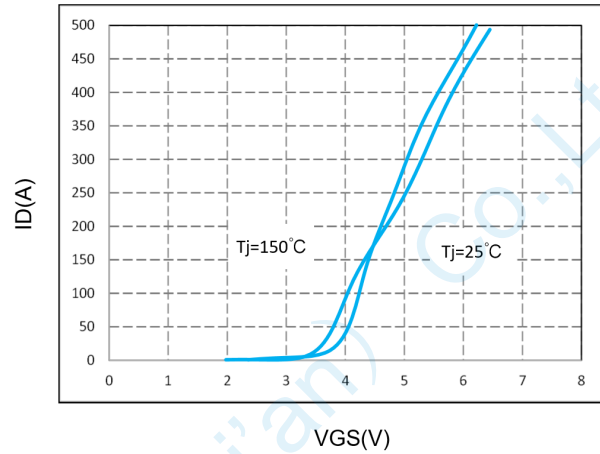
- 1: limited by T_{Jmax} , starting $T_J = 25^{\circ}\text{C}$, $L = 0.1\text{mH}$, $R_G = 25\Omega$, $V_{GS} = 10V$.
- 2: Surface mounted on 1in2 FR-4 board.
- 3: Pulse test, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

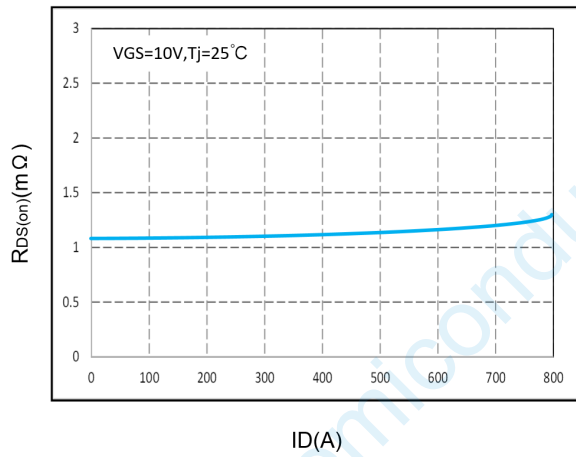
Output Characteristic



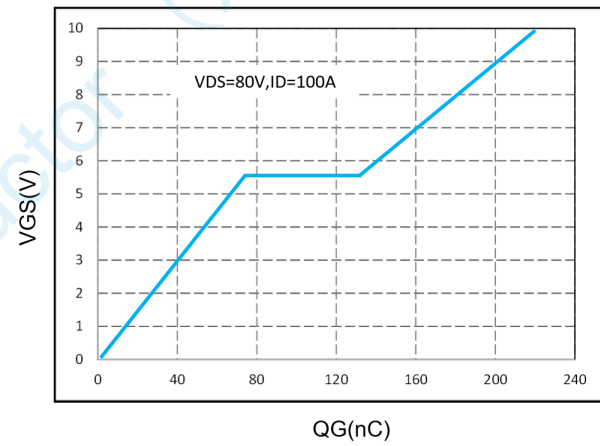
Transfer Characteristic



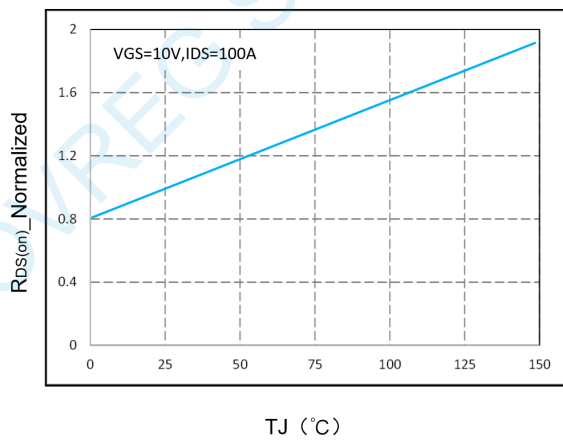
$R_{DS(ON)}$ VS. I_D



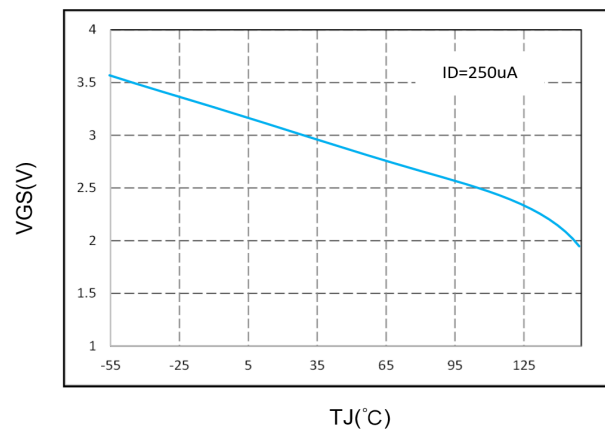
Gate Charge Characteristics



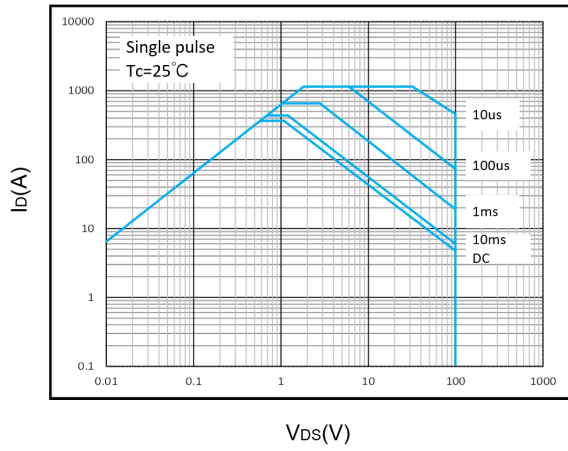
$R_{DS(ON)}$ VS. T_J



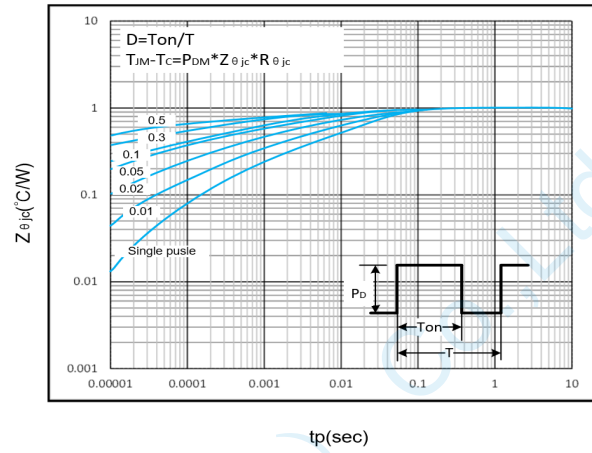
$V_{GS(th)}$ VS. T_J



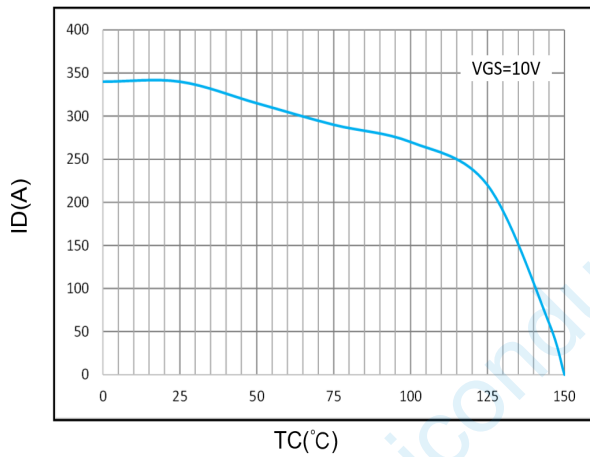
Safe Operation Area



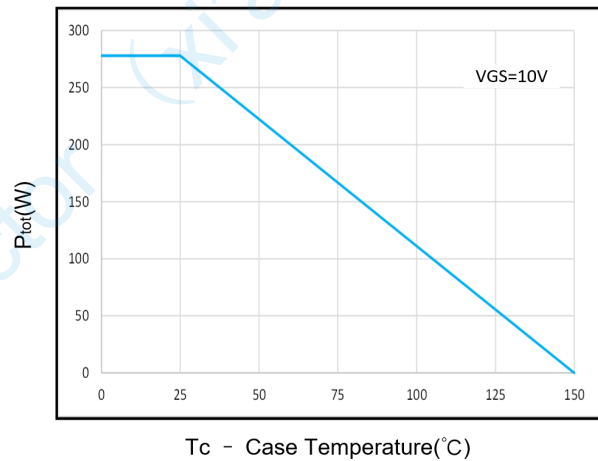
Thermal Transient Impedance



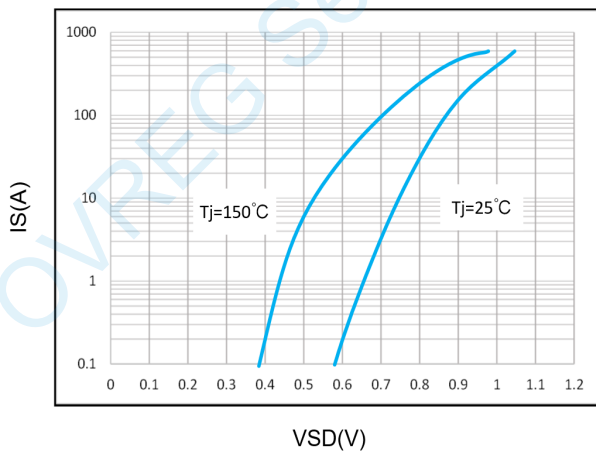
Drain Current



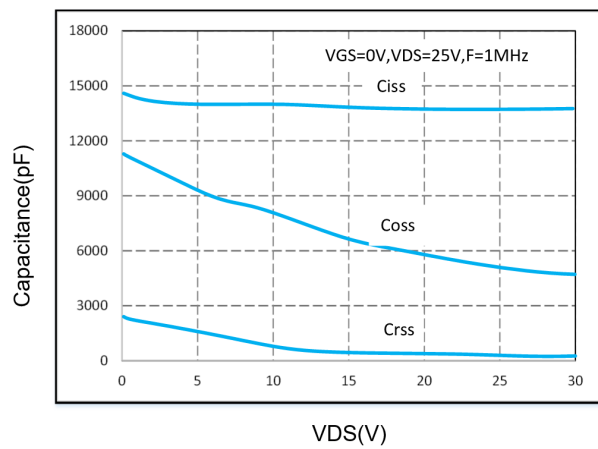
Power Dissipation



Source-Drain Diode Forward

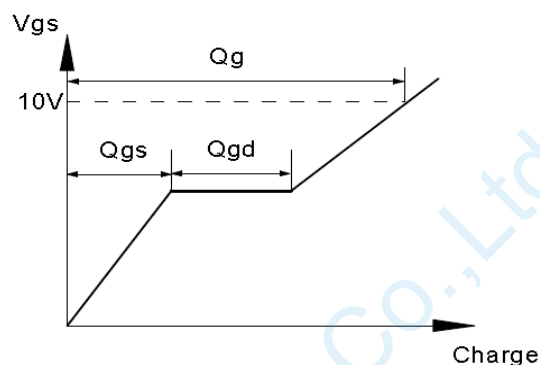
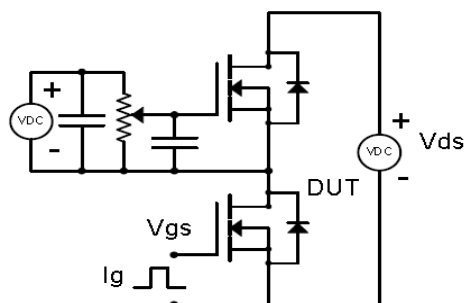


Capacitance Characteristics

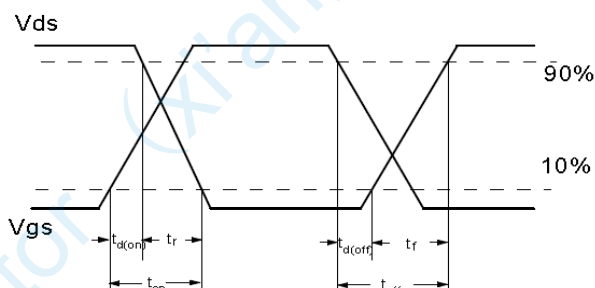
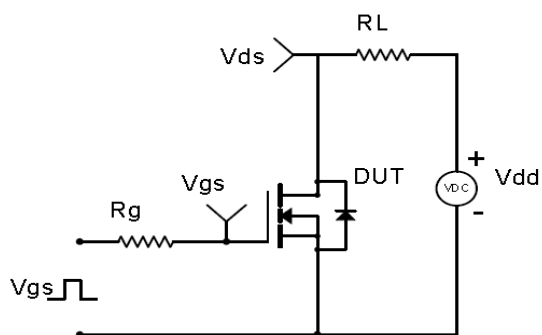


Test Circuit & Waveform

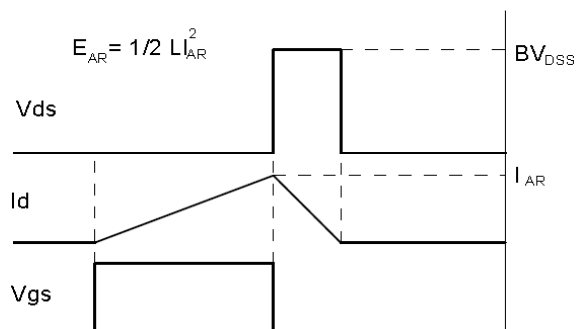
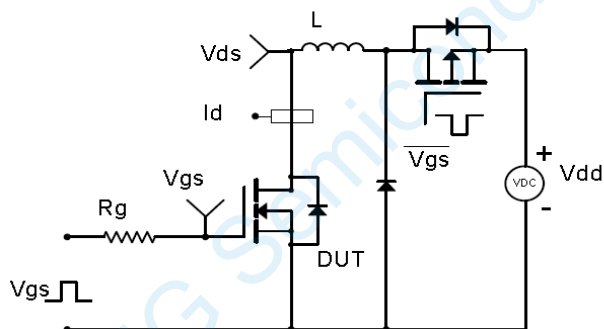
Gate Charge Test Circuit & Waveform



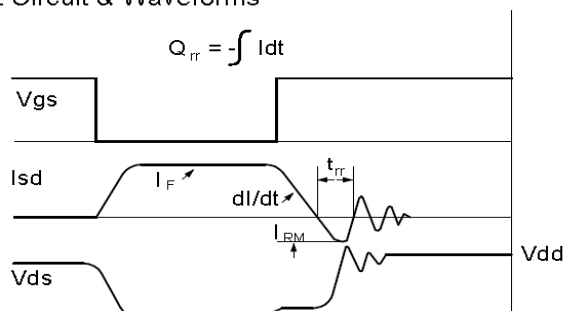
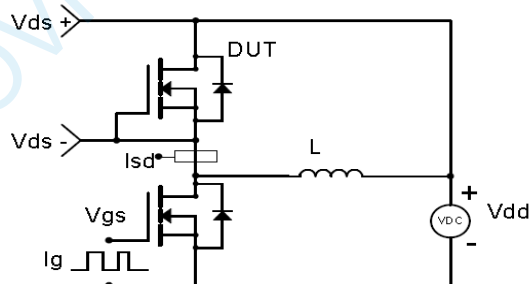
Resistive Switching Test Circuit & Waveforms



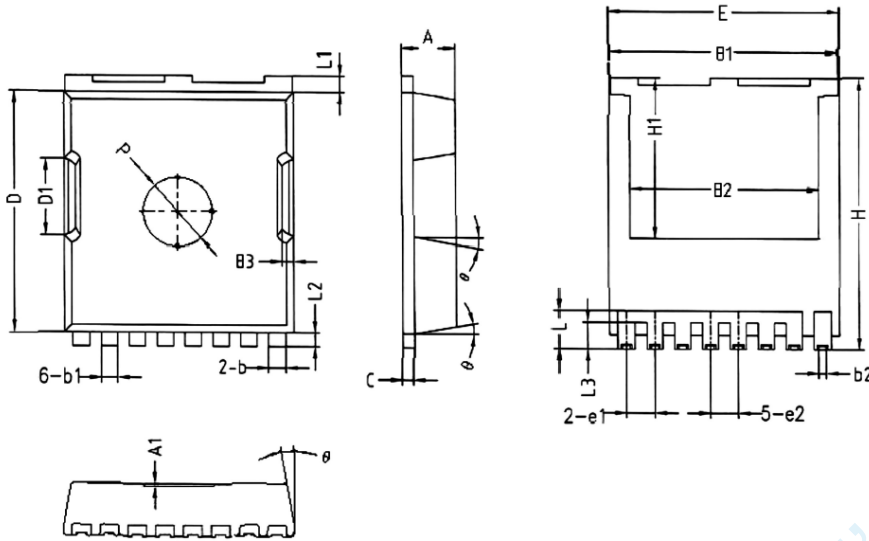
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Information



SYMBOL	MIN	NOM	MAX
A	2.2	2.3	2.4
A1	0	0.05	0.1
b	0.65	0.75	0.85
b1	0.6	0.7	0.8
b2	0.3	0.35	0.4
C	0.4	0.5	0.6
D	10.18	10.28	10.38
D1	3.15	3.3	3.45
E	9.7	9.9	10.1
E1	9.7	9.8	9.9
E2	8	8.1	8.2
E3	0.6	0.7	0.8
e1	1.175	1.225	1.275
e2	1.15	1.2	1.25
H	11.5	11.68	11.78
H1	6.8	6.95	7.1
L	1.4	1.6	1.8
L1	0.55	0.7	0.85
L2	0.5	0.6	0.7
L3	1	1.15	1.3
θ	0°	2.5°	8°
P	2.8	3	3.2

Ordering Information



OVREG----Logo
100N013TLB----Marking Code
xxxxxxx----Date Code

Ordering Information

Part number	Type	Reel size	MOQ
OVM100N013TLB	T/R	13 inch	1800/reel