

Features

- Uses advanced SGT technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent gate charge x $R_{DS(on)}$ product(FOM)

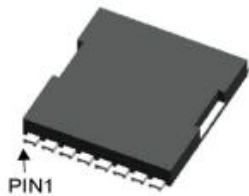
Application

- Motor control and drives
- Battery management
- DC/DC converter
- General purpose applications

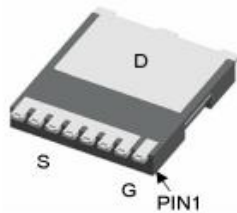
Product Summary

	TOLL
V_{DS}	80V
$R_{DS(on)@VGS=10V}$	2.3m Ω
I_D	200A

TOLL Top View



TOLL Bottom View



Package Marking and Ordering Information

Type	Package	Marking	Reel Size	Tape Width	Packing	Qty
LR032N08S10	TOLL	LR032N08S10	330*28.5mm	24mm	Reel&Tape	2000

Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	80	V
Continuous drain current $T_C = 25^\circ\text{C}$ (Silicon limit) $T_C = 25^\circ\text{C}$ (Package limit) $T_C = 100^\circ\text{C}$ (Silicon limit)	I_D	220 200 110	A
Pulsed drain current $T_C = 25^\circ\text{C}$, t_p limited by T_{jmax}	$I_{D\ pulse}$	676	
Avalanche energy, single pulse (L=0.5mH,Rg=25 Ω)	E_{AS}	1406	mJ
Gate-Source voltage	V_{GS}	± 20	V
Power dissipation $T_C = 25^\circ\text{C}$	P_D	227	W
Operating junction and storage temperature	T_j, T_{stg}	-55~150	$^\circ\text{C}$

Thermal Resistance

	Symbol	Value	Unit
Thermal resistance, junction – case. Max	R_{thJC}	0.53	°C/W
Thermal resistance, junction – ambient. Max	R_{thJA}	60	

Electrical Characteristic, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	

Static Characteristic

Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	80	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$ $T_j=25^\circ C$	2	3	4	
Zero gate voltage drain current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$ $T_j=25^\circ C$	-	-	1	μA
		$V_{DS}=64V, V_{GS}=0V$ $T_j=125^\circ C$	-	-	10	
Gate-source leakage current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$	-	-	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A,$ $T_j=25^\circ C$	-	2.3	3.2	mΩ
Transconductance	g_{fs}	$V_{DS}=5V, I_D=40A$	-	145	-	S

Dynamic Characteristic

Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=40V,$ $f=1MHz$	-	4900	-	pF
Output Capacitance	C_{oss}		-	790	-	
Reverse Transfer Capacitance	C_{rss}		-	36	-	
Gate Total Charge	Q_G	$V_{GS}=10V, V_{DS}=40V,$ $I_D=50A$	-	70	-	nC
Gate-Source charge	Q_{gs}		-	24	-	
Gate-Drain charge	Q_{gd}		-	15	-	
Turn-on delay time	$t_{d(on)}$	$T_j=25^\circ C, V_{GS}=10V,$ $V_{DS}=40V, R_L=3\Omega$	-	20	-	ns
Rise time	t_r		-	12	-	
Turn-off delay time	$t_{d(off)}$		-	42	-	
Fall time	t_f		-	13	-	
Gate resistance	R_G	$V_{GS}=0V, V_{DS}=0V,$ $f=1MHz$	-	1.5	-	Ω

Body Diode Characteristic

Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=50A$	-	0.85	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=30A,$ $dI/dt=500A/\mu s$	-	84	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=30A,$ $dI/dt=500A/\mu s$	-	175	-	nC

Preliminary

Typical Performance Characteristics

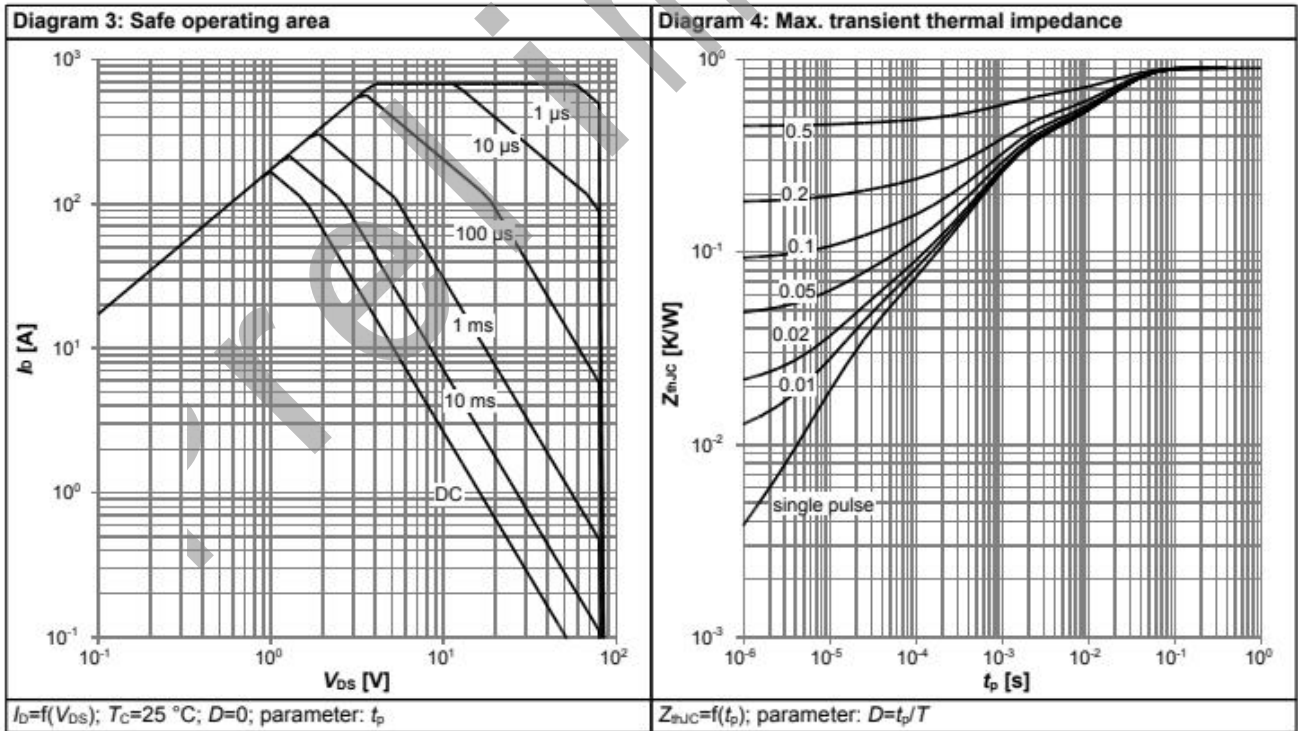
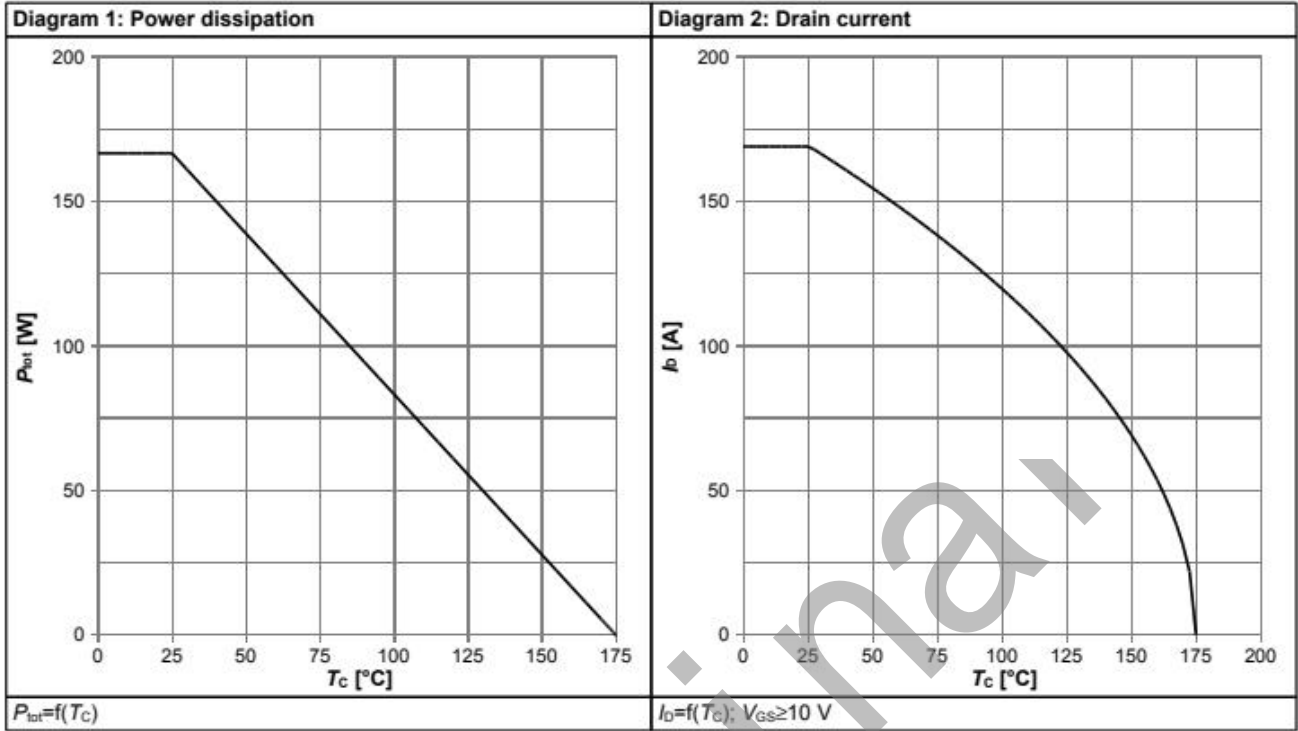
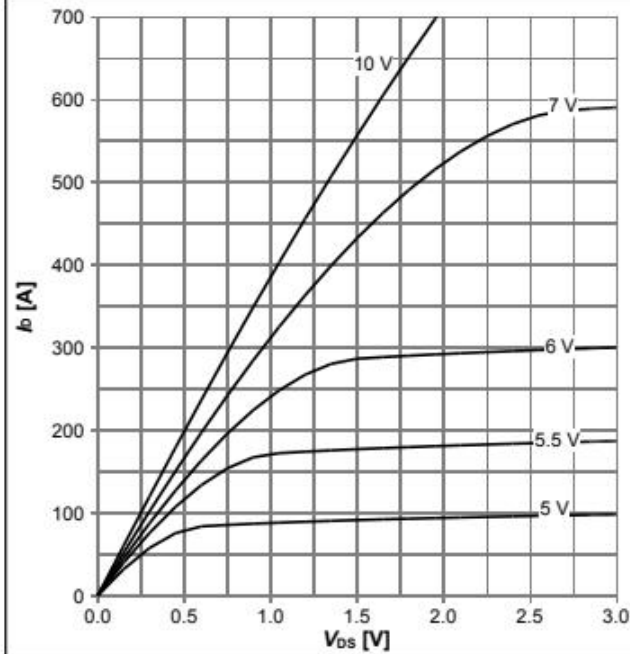
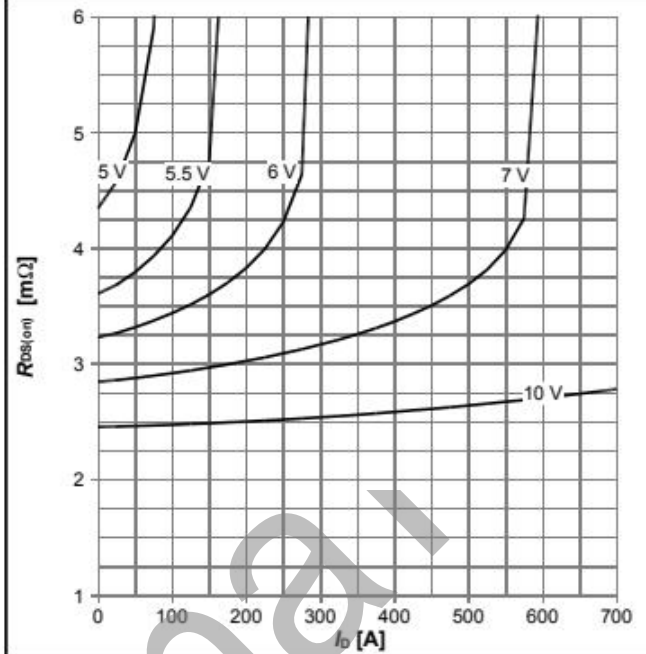


Diagram 5: Typ. output characteristics



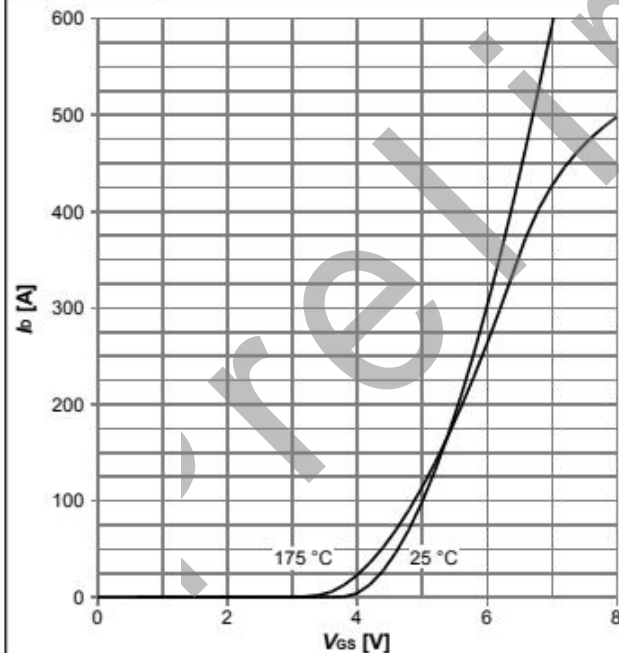
$I_D=f(V_{DS}); T_j=25\text{ }^\circ\text{C};$ parameter: V_{GS}

Diagram 6: Typ. drain-source on resistance



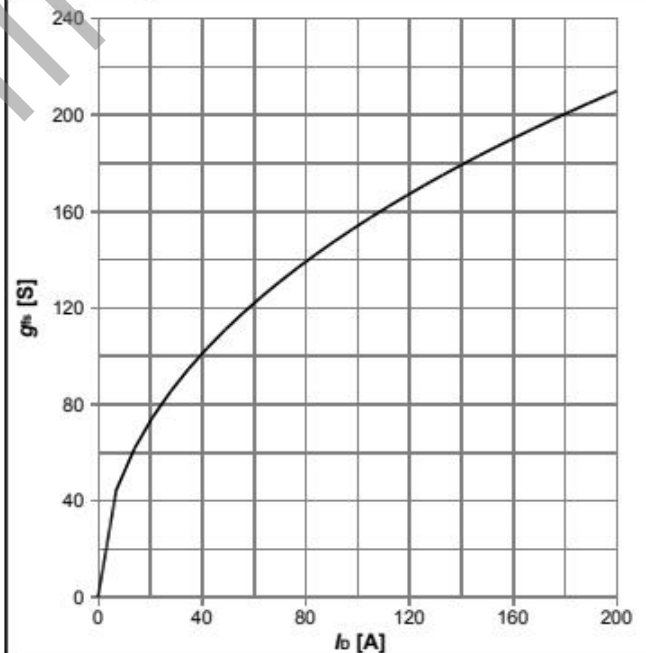
$R_{DS(on)}=f(I_D); T_j=25\text{ }^\circ\text{C};$ parameter: V_{GS}

Diagram 7: Typ. transfer characteristics



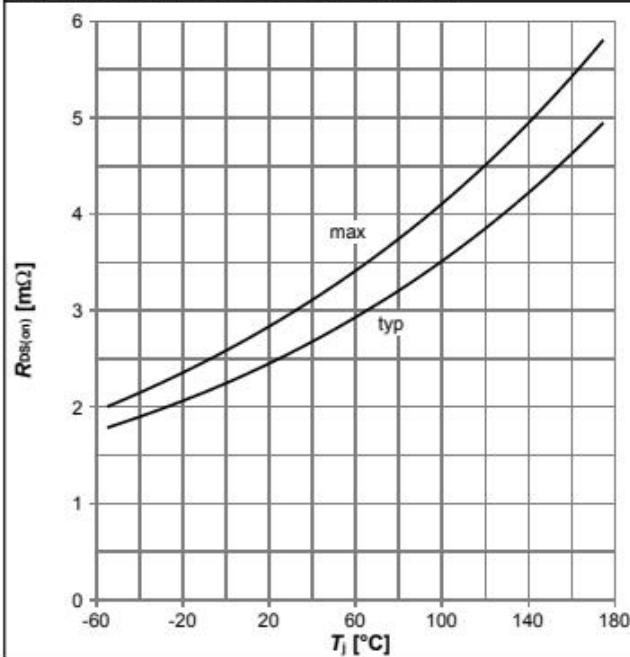
$I_D=f(V_{GS}); |V_{DS}|>2|I_D|R_{DS(on)max};$ parameter: T_j

Diagram 8: Typ. forward transconductance



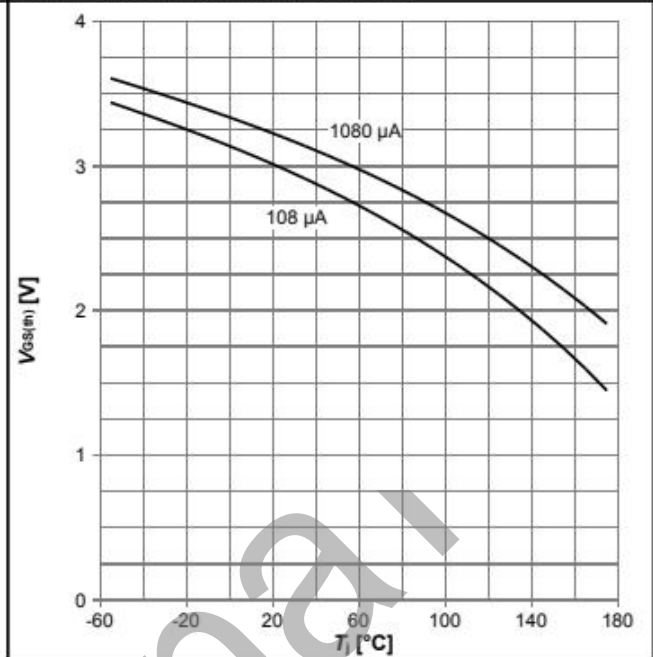
$g_{fs}=f(I_D); T_j=25\text{ }^\circ\text{C}$

Diagram 9: Drain-source on-state resistance



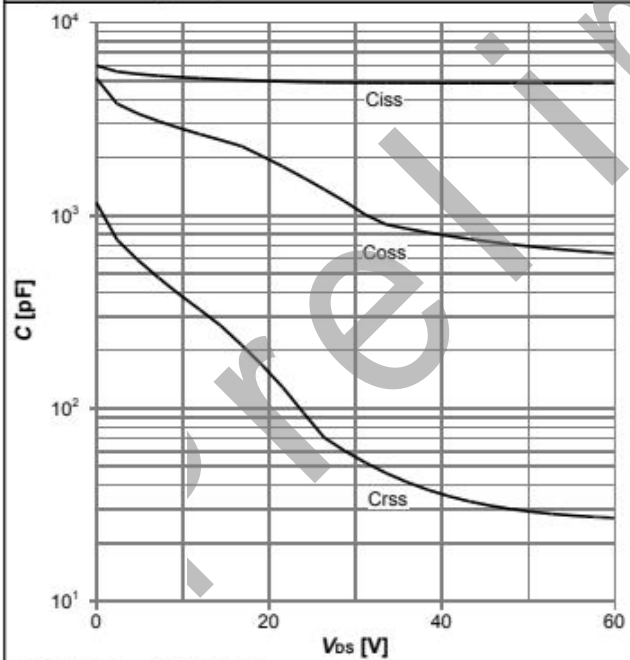
$R_{DS(on)}=f(T_j)$; $I_D=150\text{ A}$; $V_{GS}=10\text{ V}$

Diagram 10: Typ. gate threshold voltage



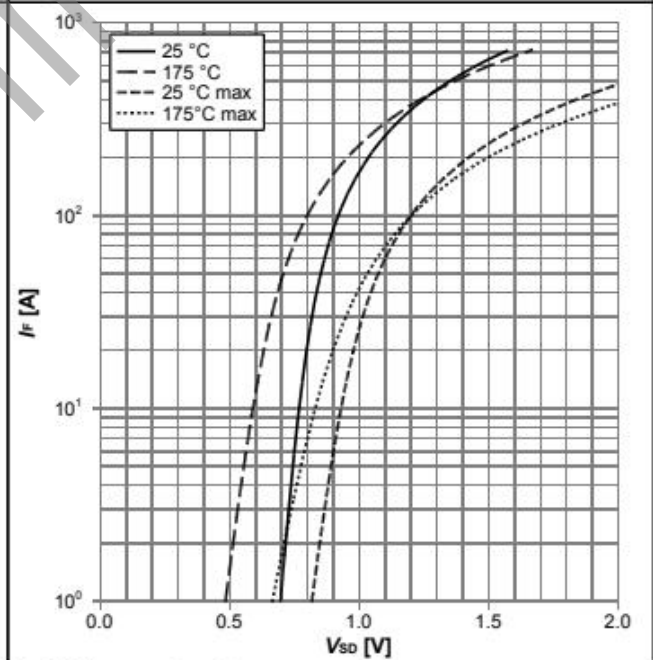
$V_{GS(th)}=f(T_j)$; $V_{GS}=V_{DS}$

Diagram 11: Typ. capacitances

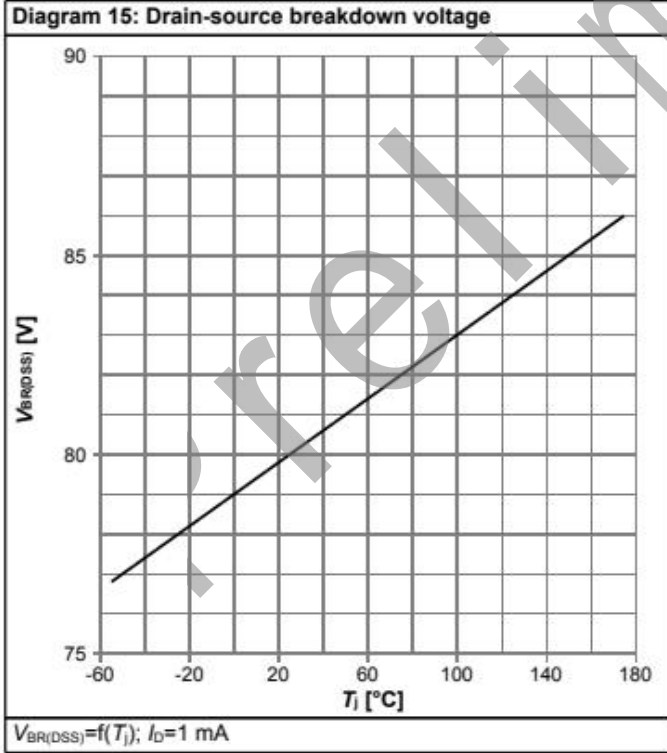
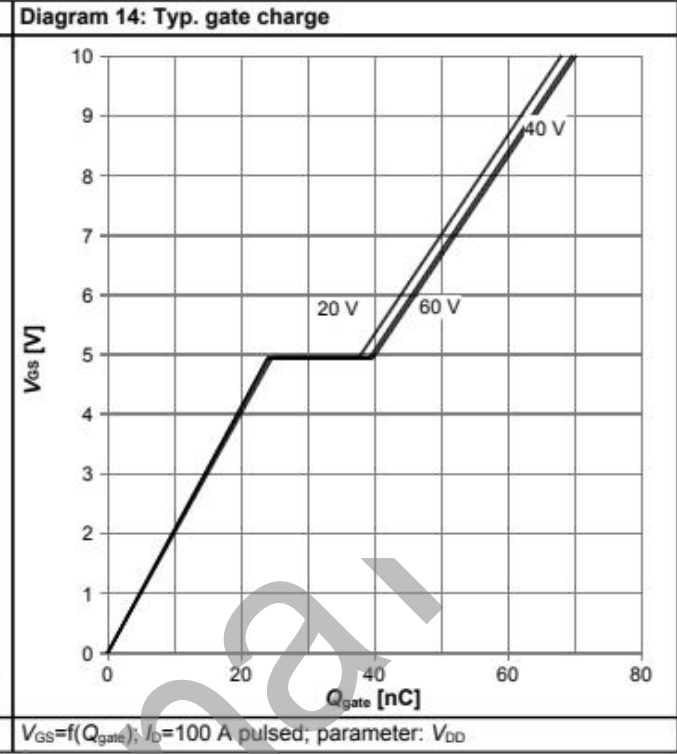
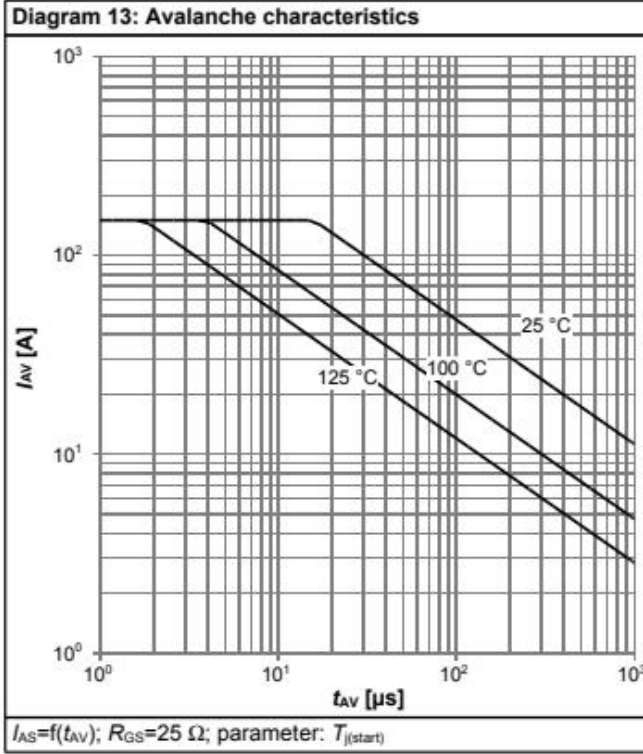


$C=f(V_{DS})$; $V_{GS}=0\text{ V}$; $f=1\text{ MHz}$

Diagram 12: Forward characteristics of reverse diode

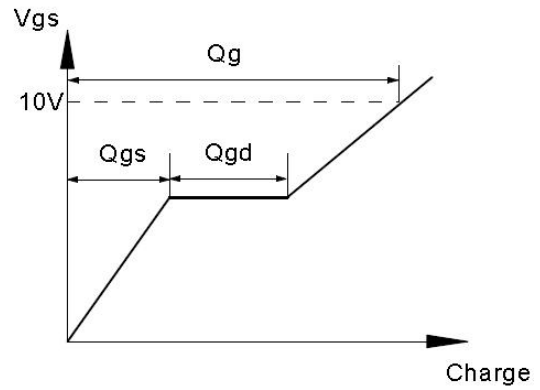
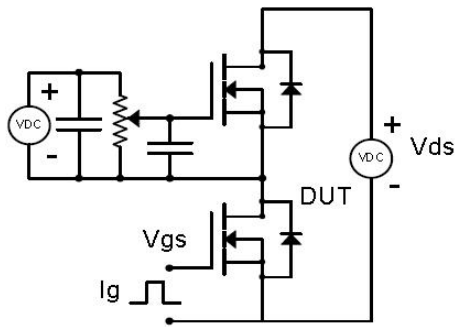


$I_F=f(V_{SD})$; parameter: T_j

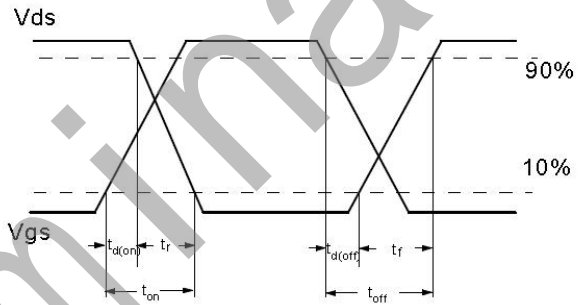
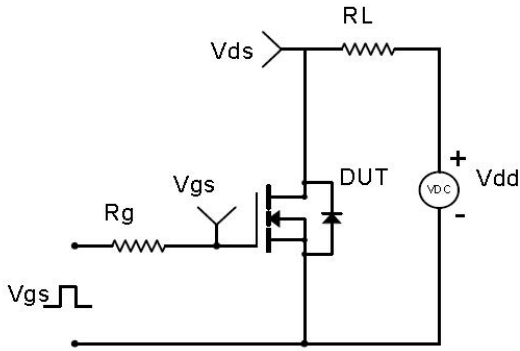


Test Circuit & Waveform

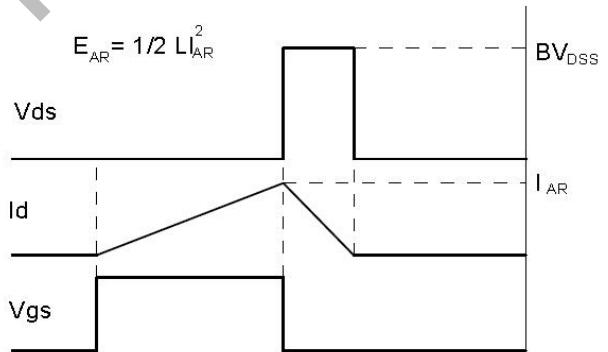
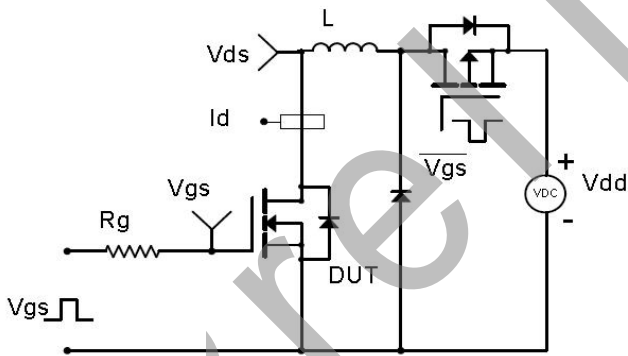
Gate Charge Test Circuit & Waveform



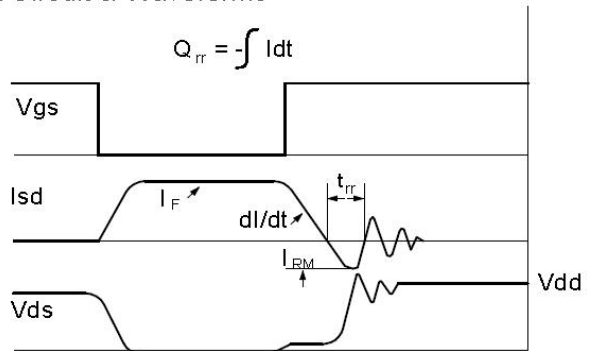
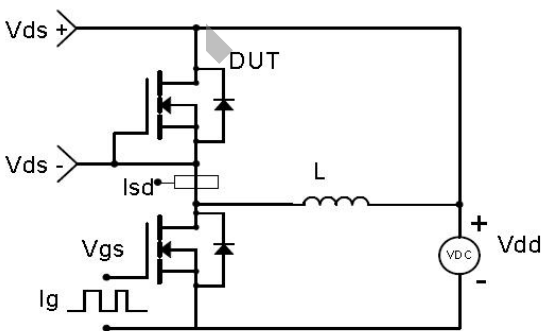
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

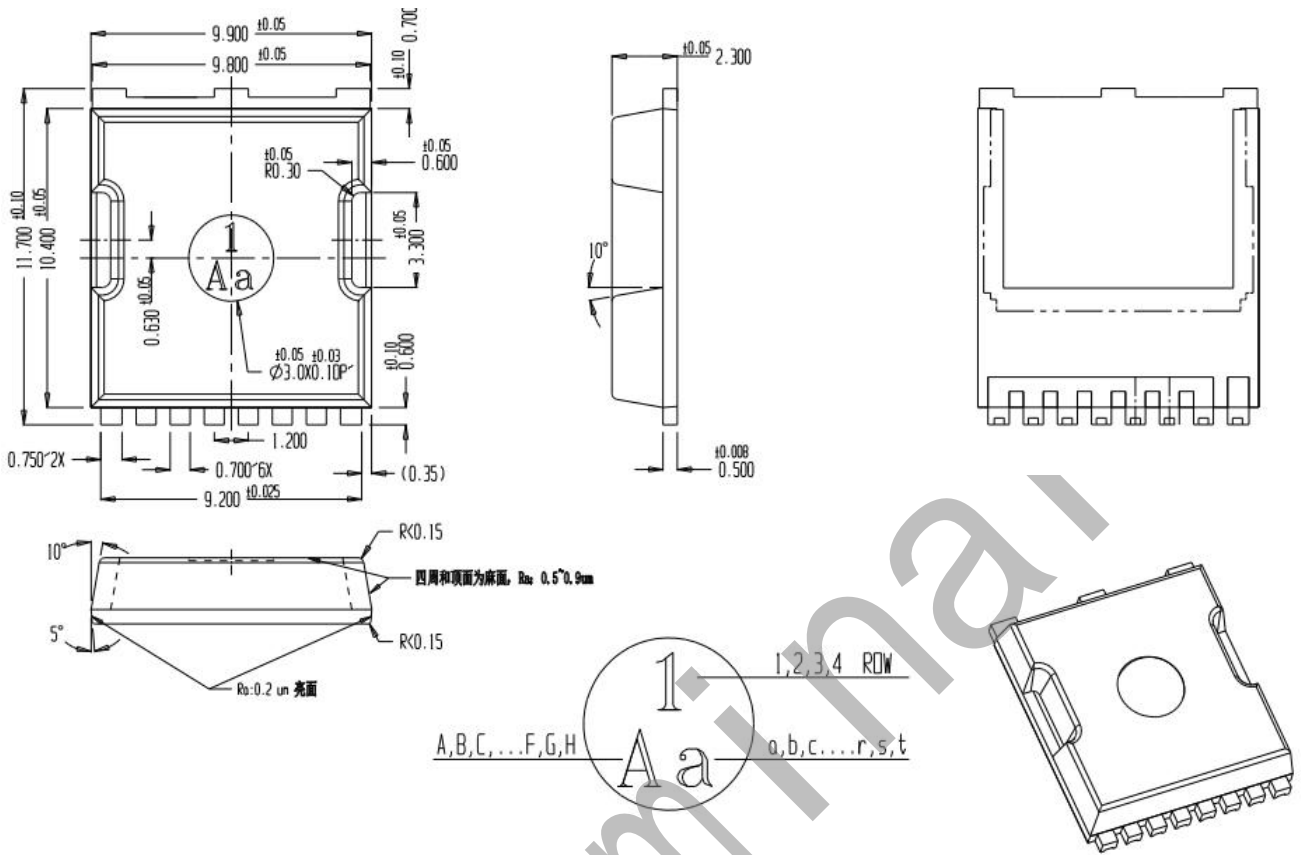


Diode Recovery Test Circuit & Waveforms



LR032N08S10 N-MOSFET 80V, 200A, 2.3mΩ

Package Outline: TOLL



Revision History

Revision	Date	Major changes
0.0	2021/10/12	Preliminary Revision

preliminary