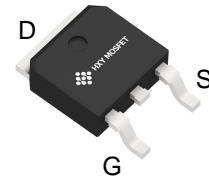




General Description

The RD3L08BBLHRBTL use advanced SGT MOSFET technology to provide low RDS(ON), low gate charge, fast switching and excellent avalanche characteristics. This device is specially designed to get better ruggedness.



TO-252-2L

General Features

$V_{DS} = 60V$ $I_D = 130A$

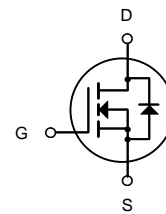
$R_{DS(ON)} < 3.5m\Omega @ V_{GS} = 10V$

Applications

Consumer electronic power supply Motor control

Synchronous-rectification Isolated DC

Synchronous-rectification applications



N-Channel MOSFET

Ordering Information

Product ID	Pack	Brand	Qty(PCS)
RD3L08BBLHRBTL	TO-252-2L	HXY MOSFET	2500

Absolute Maximum Ratings (Tc=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	130	A
$I_D @ T_C = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	85	A
I_{DM}	Pulsed Drain Current ²	390	A
EAS	Single Pulse Avalanche Energy ³	80	mJ
$P_D @ T_C = 25^\circ C$	Total Power Dissipation ⁴	140	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C
$R_{\theta JC}$	Thermal Resistance Junction-Ambient ¹	0.89	°C/W



Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.6	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =10V, I _D =20A	-	3	3.5	mΩ
		V _{GS} =4.5V, I _D =10A	-	3.5	4.5	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	5377	-	pF
C _{oss}	Output Capacitance		-	1666	-	pF
C _{rss}	Reverse Transfer Capacitance		-	77.7	-	pF
Q _g	Total Gate Charge	V _{DS} =30V, I _D =25A, V _{GS} =10V	-	66.1	-	nC
Q _{gs}	Gate-Source Charge		-	10.7	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	10.9	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =30V, I _D =25A, R _G =3Ω, V _{GS} =10V	-	20	-	ns
t _r	Turn-on Rise Time		-	55	-	ns
t _{d(off)}	Turn-off Delay Time		-	100	-	ns
t _f	Turn-off Fall Time		-	24	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	125	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	390	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =30A	-	0.8	1.3	V
t _{rr}	Body Diode Reverse Recovery Time	T _J =25°C, I _F =25A, di/dt=100A/μs	-	68.3	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	73	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25°C, V_{DD}=30V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=12A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



Typical Performance Characteristics

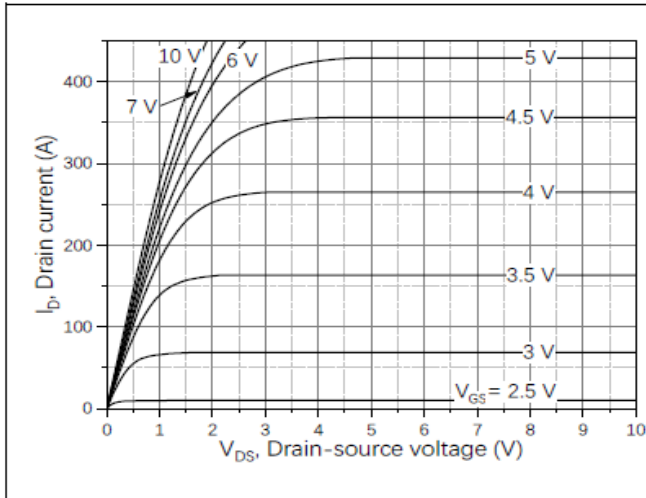


Figure 1, Typ. output characteristics

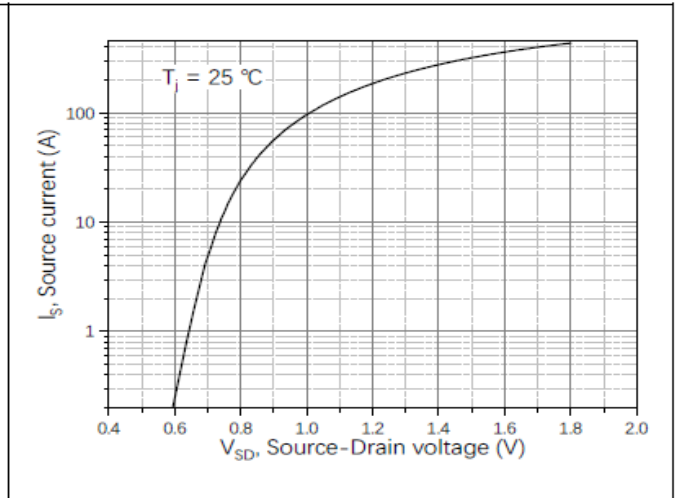


Figure 2, Typ. transfer characteristics

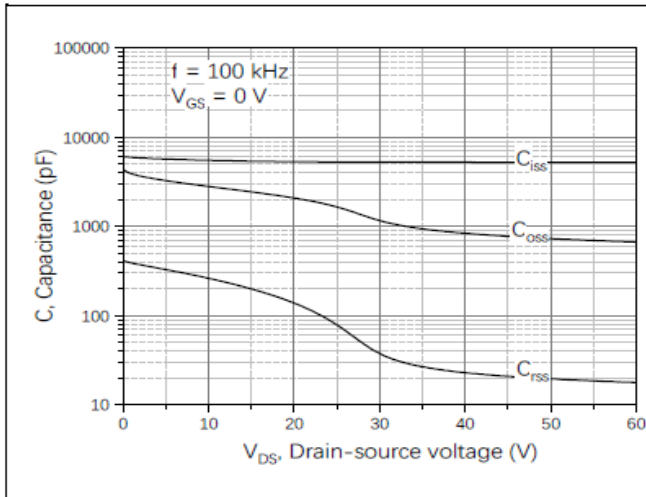


Figure 3, Typ. capacitances

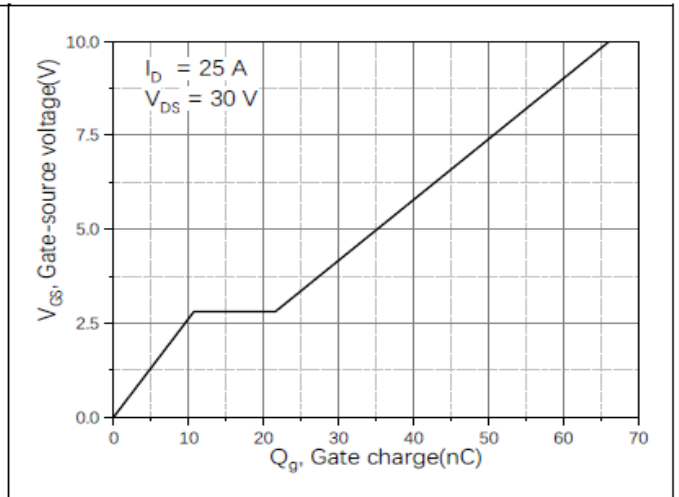


Figure 4, Typ. gate charge

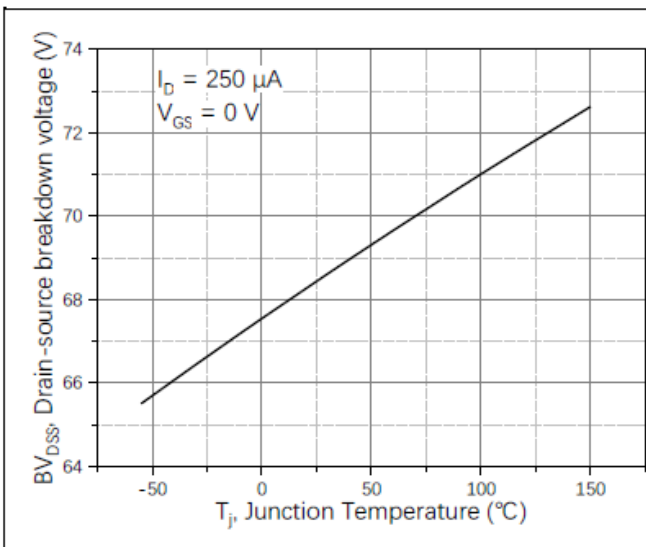


Figure 5, Drain-source breakdown voltage

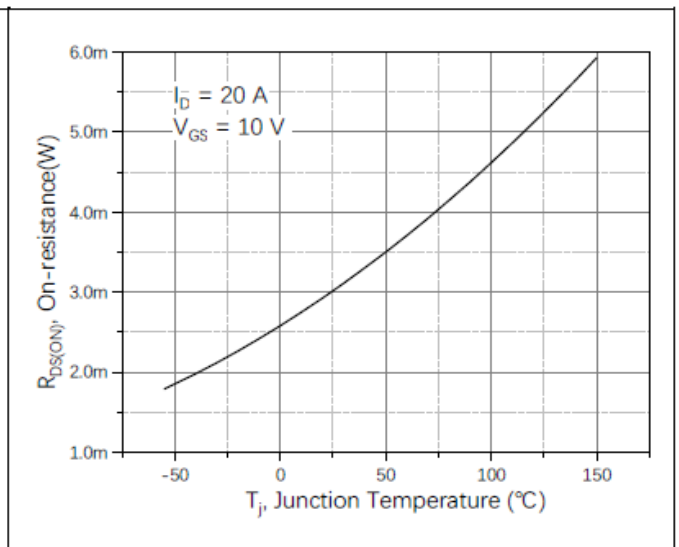


Figure 6, Drain-source on-state resistance

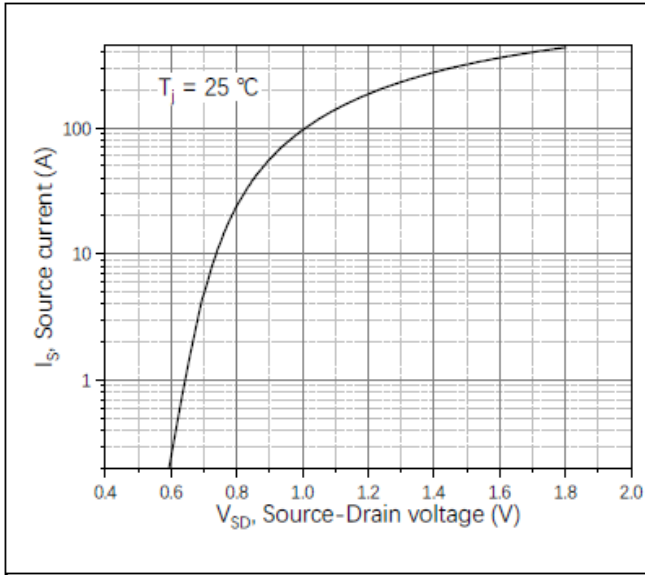


Figure 7, Forward characteristic of body diode

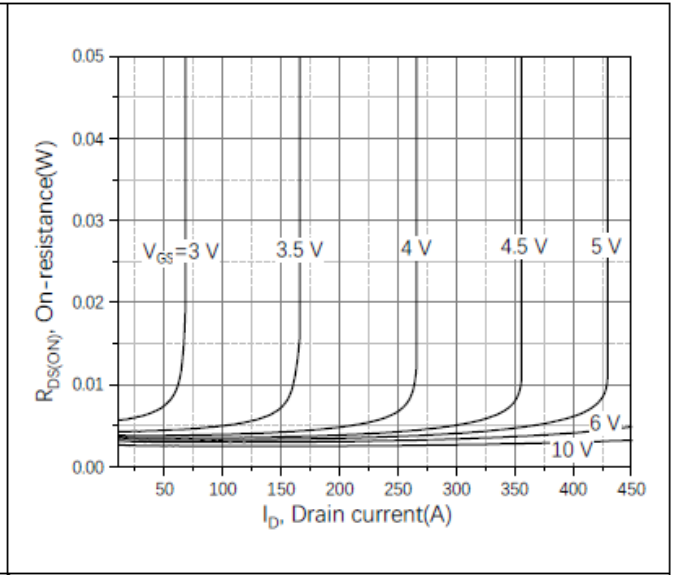


Figure 8, Drain-source on-state resistance

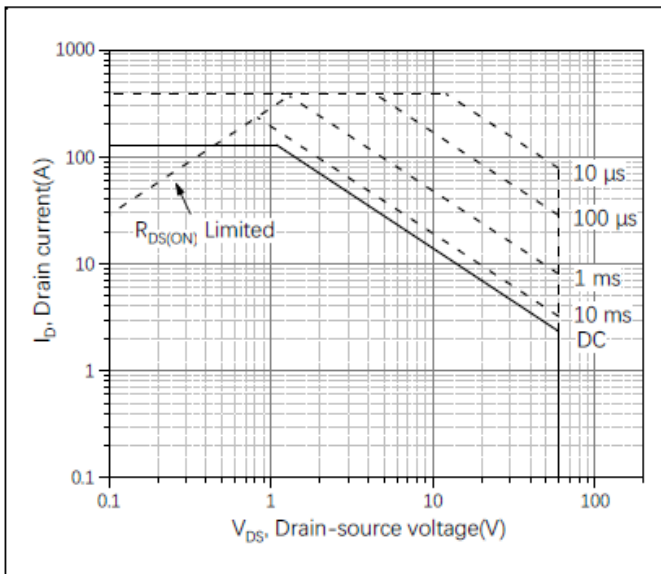
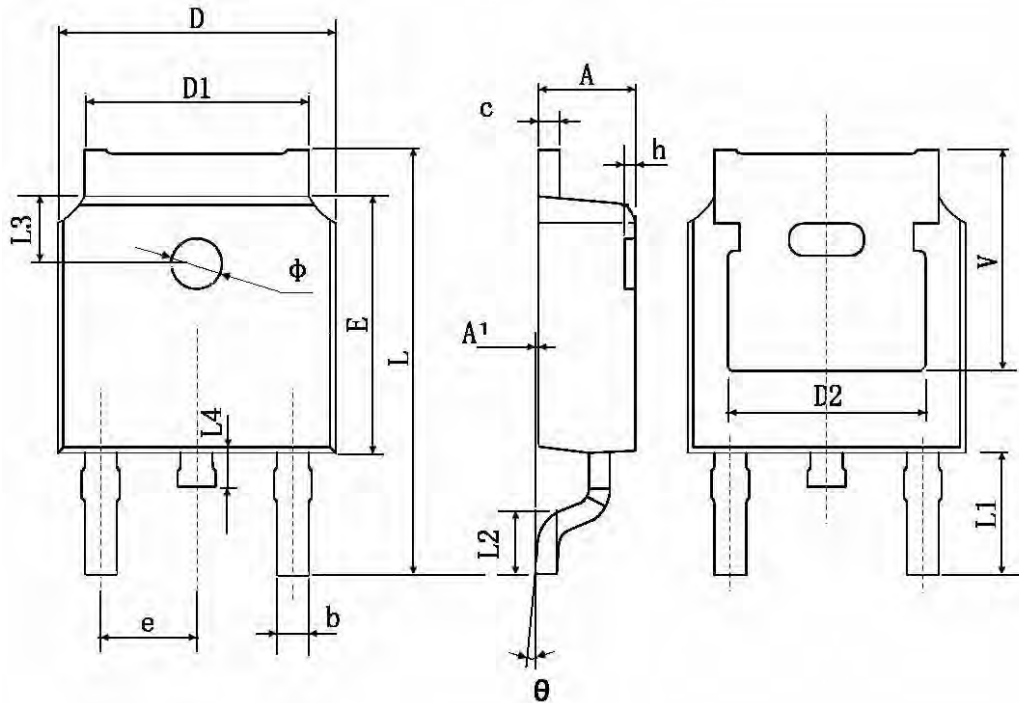


Figure 9, Safe operation area $T_C=25\text{ }^\circ\text{C}$



TO-252-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	0.483 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	



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