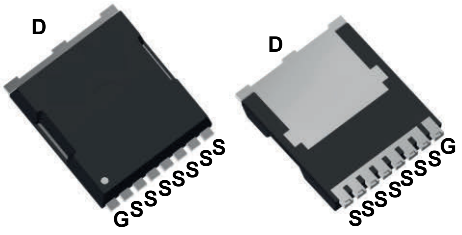
GOOD-ARK
SEMICONDUCTOR

GSGTL1R608

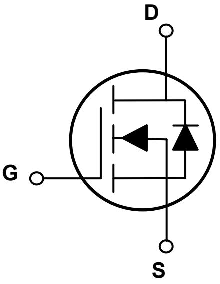
80V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	80V
$R_{DS(ON)}$	1.6mΩ (Max.)
I_D	300A



TOLL



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery

Description

The GSGTL1R608 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supplies and a wide variety of other applications.

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous, @ Steady-State (T_C=25°C)	I_D	300	A
Drain Current-Continuous, @ Steady-State (T_C=100°C)		206	
Drain Current-Pulsed (T_C=25°C)^1	I_{DM}	1200	A
Single Pulse Avalanche Energy	E_{AS}	3400	mJ
Single Pulse Avalanche Current	I_{AS}	80	A
Power Dissipation (T_C=25°C)^2	P_D	400	W
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	50	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta Jc}$	0.31	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	80	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=80V, V_{GS}=0V, T_J=25°C	-	-	1	μA
		V_{DS}=80V, V_{GS}=0V, T_J=125°C	-	5.0	-	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=30A	-	1.1	1.6	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250uA	2.1	-	3.9	V
Dynamic and Switching Characteristics						
Total Gate Charge[3,4]	Q_g	V_{DD}=40V, I_D=80A, V_{GS}=10V	-	202	-	nC
Gate-Source Charge[3,4]	Q_{gs}		-	53	-	
Gate-Drain ("Miller") Charge[3,4]	Q_{gd}		-	52	-	
Gate to Plateau[3,4]	$V_{plateau}$		-	4.9	-	V
Turn-On Delay Time[3,4]	$t_{d(on)}$	V_{DD}=40V, R_G=6Ω, V_{GS}=10V, I_D=80A	-	32	-	nS
Rise Time[3,4]	t_r		-	82	-	
Turn-Off Delay Time[3,4]	$t_{d(off)}$		-	80	-	
Fall Time[3,4]	t_f		-	34	-	
Input Capacitance	C_{iss}	V_{DS}=40V, V_{GS}=0V, F=1MHz	-	13000	-	pF
Output Capacitance	C_{oss}		-	3000	-	
Reverse Transfer Capacitance	C_{rss}		-	57	-	
Gate Resistance	R_g	F=1MHz	-	2.0	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	300	A
Pulsed Source Current	$I_{S,\ pulse}$		-	-	1200	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=30A	-	-	1.4	V
Reverse Recovery Time[3]	T_{rr}	V_{GS}=0V, I_S=20A, dI_F/dt=100A/μs	-	120	-	nS
Reverse Recovery Charge[3]	Q_{rr}		-	430	-	nC

Note:

1. Pulse time of 5us, pulse width limited by maximum junction temperature.
2. The dissipated power value will change with the temperature. When it is greater than 25°C, the dissipated power value will decrease by 1.0°C/W for every 1 degree of temperature increase.
3. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

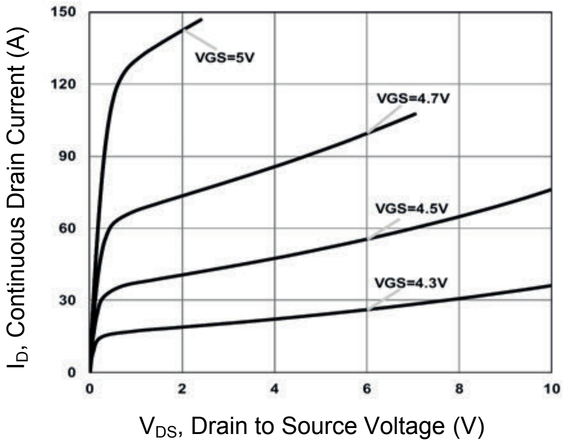


Figure 1. Typical Output Characteristics

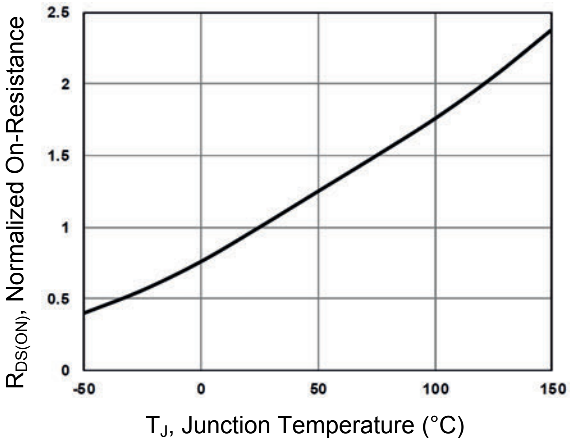


Figure 2. Normalized $R_{DS(ON)}$ Vs. T_J

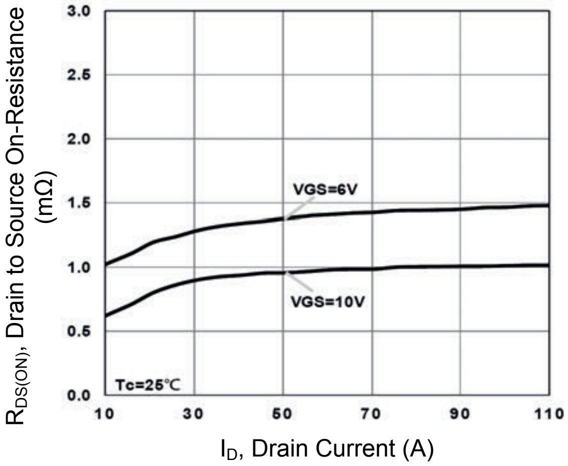


Figure 3. $R_{DS(ON)}$ Vs. Drain Current

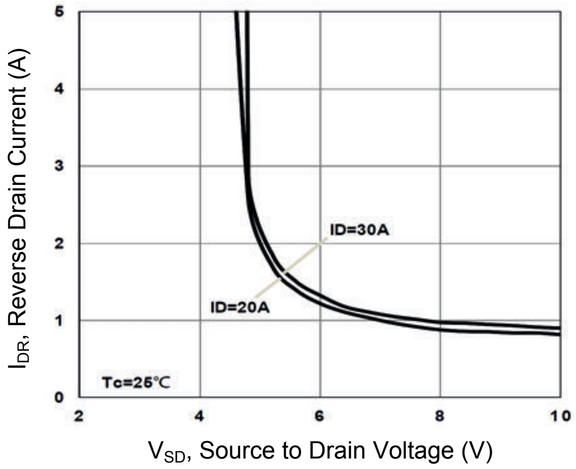


Figure 4. Body Diode Characteristics

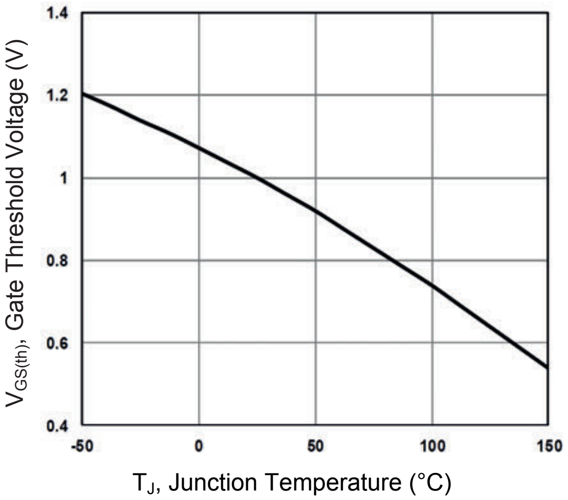


Figure 5. Gate Threshold Voltage Vs. T_J

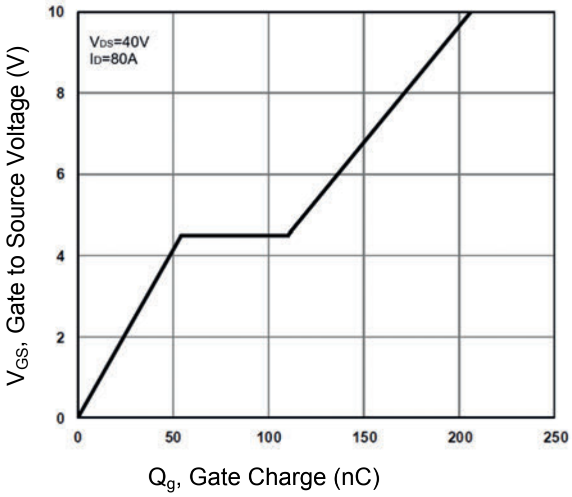


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristic Curves

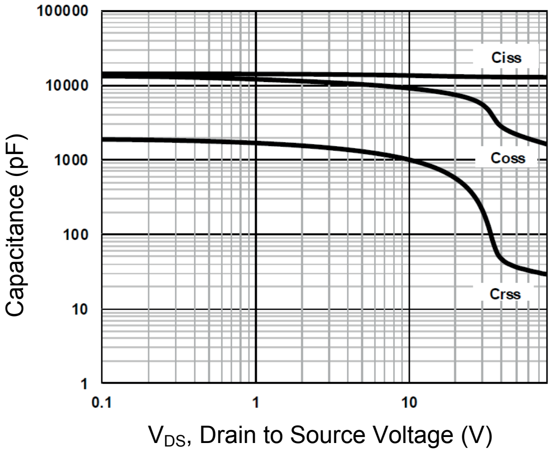


Figure 7. Capacitance Characteristics

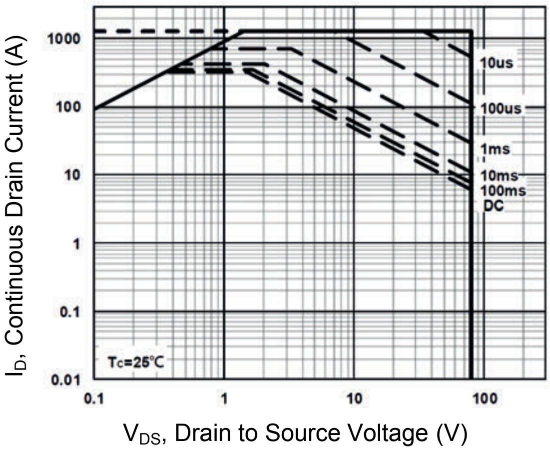
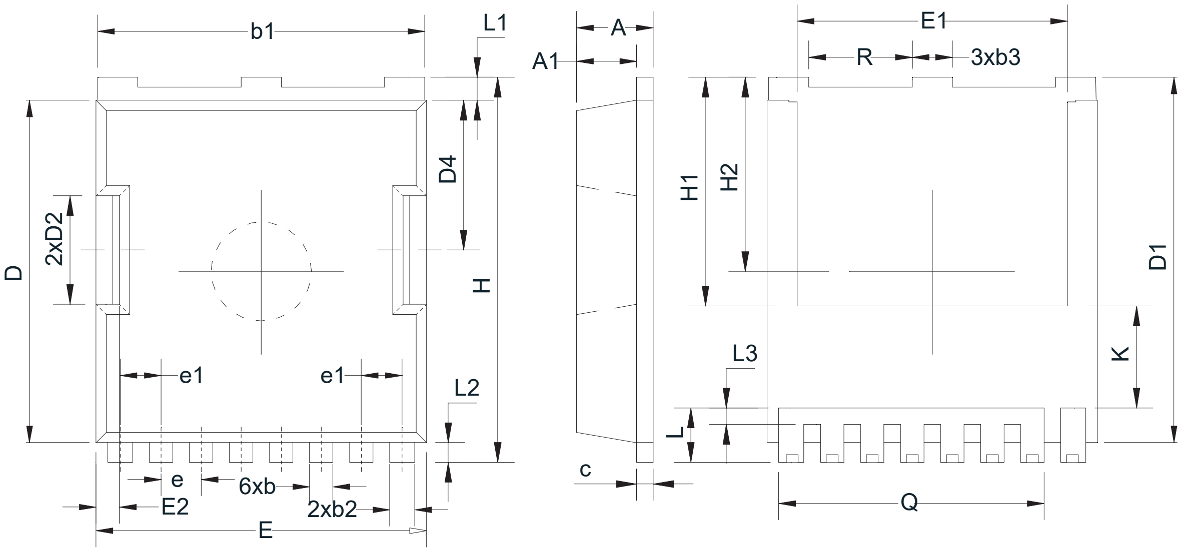


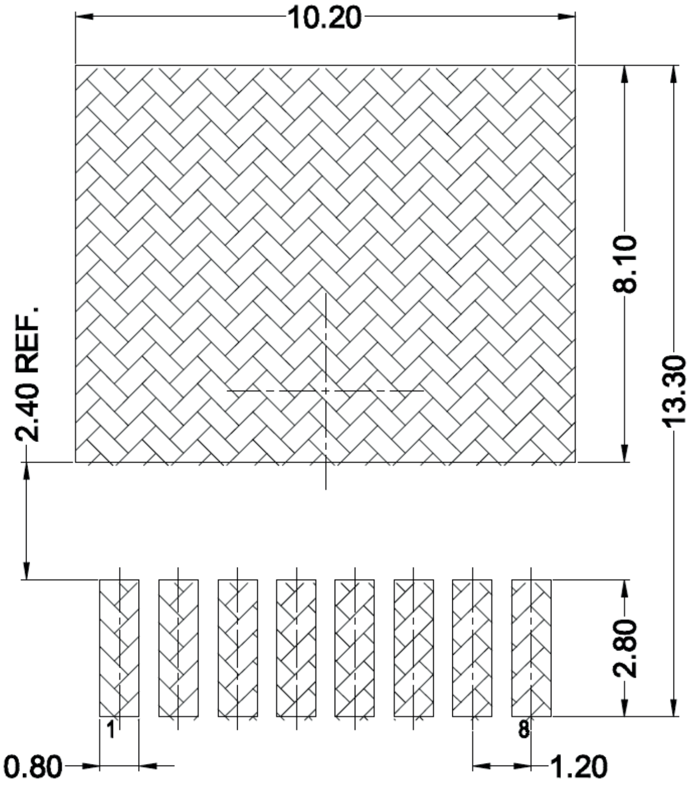
Figure 8. Safe Operation Area

Package Outline Dimensions (TOLL)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.25	2.35	0.089	0.093
A1	1.75	1.85	0.069	0.073
b	0.65	0.75	0.026	0.030
b1	9.75	9.85	0.384	0.388
b2	0.70	0.80	0.028	0.031
b3	1.15	1.25	0.045	0.049
c	0.45	0.55	0.018	0.022
D	10.35	10.45	0.407	0.411
D1	11.00	11.20	0.433	0.441
D2	3.25	3.35	0.128	0.132
D4	4.50	4.60	0.177	0.181
e	1.200 BSC		0.047 BSC	
e1	1.225 BSC		0.048 BSC	
E	9.85	9.95	0.388	0.392
E1	8.00	8.20	0.315	0.323
E2	0.65	0.75	0.026	0.030
H	11.60	11.80	0.457	0.465
H1	6.95 BSC		0.274 BSC	
H2	5.90 BSC		0.232 BSC	
K	3.10 REF		0.122 REF	
L	1.55	1.75	0.061	0.069
L1	0.65	0.75	0.026	0.030
L2	0.50	0.70	0.020	0.028
L3	0.40	0.60	0.016	0.024
Q	7.95 REF		0.313 REF	
R	3.05	3.15	0.120	0.124

Recommended Pad Layout



unit : mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSGTL1R608	TOLL	TL1R608	Tape & Reel	2,000 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com