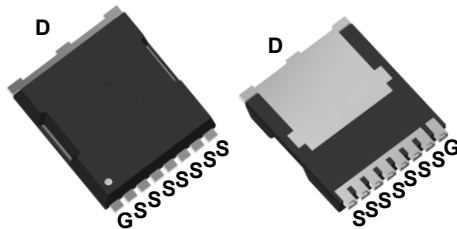
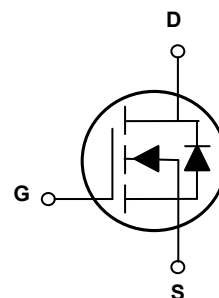


Main Product Characteristics

BV_{DSS}	150V
$R_{DS(ON)}$	5.2m Ω
I_D	165A



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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 GSGTL15166 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 supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_c=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_c=25^{\circ}C$)	I_D	165	A
Drain Current-Continuous ($T_c=100^{\circ}C$)		104	
Drain Current-Pulsed ¹	I_{DM}	660	A
Single Pulse Avalanche Energy ²	E_{AS}	1350	mJ
Single Pulse Avalanche Current ²	I_{AS}	52	A
Power Dissipation ($T_c=25^{\circ}C$)	P_D	430	W
Power Dissipation-Derate above 25 $^{\circ}C$		3.44	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	55	$^{\circ}C/W$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.29	$^{\circ}C/W$
Operating Junction Temperature Range	T_J	-55 To +150	$^{\circ}C$
Storage Temperature Range	T_{STG}	-55 To +150	$^{\circ}C$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	150	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=120V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	-	-	1	μA
		$V_{DS}=120V, V_{GS}=0V, T_J=85^{\circ}\text{C}$	-	-	10	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	4.4	5.2	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0	3.0	4.0	V
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=3A$	-	17	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{DS}=75V, I_D=80A, V_{GS}=10V$	-	130	170	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	36	55	
Gate-Drain Charge ^{3,4}	Q_{gd}		-	32	50	
Turn-On Delay Time ^{3,4}	$t_{d(on)}$	$V_{DD}=75V, R_G=6\Omega, V_{GS}=10V, I_D=80A$	-	70	105	nS
Rise Time ^{3,4}	t_r		-	205	310	
Turn-Off Delay Time ^{3,4}	$t_{d(off)}$		-	402	600	
Fall Time ^{3,4}	t_f		-	197	300	
Input Capacitance	C_{iss}	$V_{DS}=75V, V_{GS}=0V, F=1\text{MHz}$	-	8525	12500	pF
Output Capacitance	C_{oss}		-	700	1050	
Reverse Transfer Capacitance	C_{rss}		-	25	40	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	-	2.7	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_s	$V_G=V_D=0V, \text{Force Current}$	-	-	165	A
Pulsed Source Current ³	I_{SM}		-	-	330	A
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V, I_s=1A, T_J=25^{\circ}\text{C}$	-	-	1	V
Reverse Recovery Time	t_{rr}	$V_R=100V, I_s=20A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	-	135	-	nS
Reverse Recovery Charge	Q_{rr}		-	730	-	nC

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, V_{GS}=10V, L=1\text{mH}, I_{AS}=52A, R_G=25\Omega$, starting $T_J=25^{\circ}\text{C}$.
3. The datasheet test by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

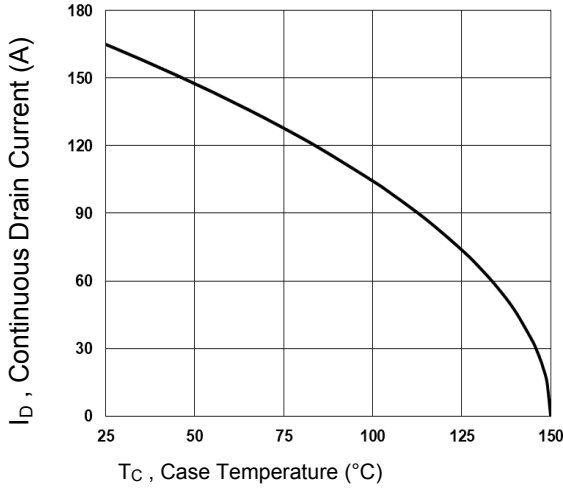


Fig.1 Continuous Drain Current vs. Tc

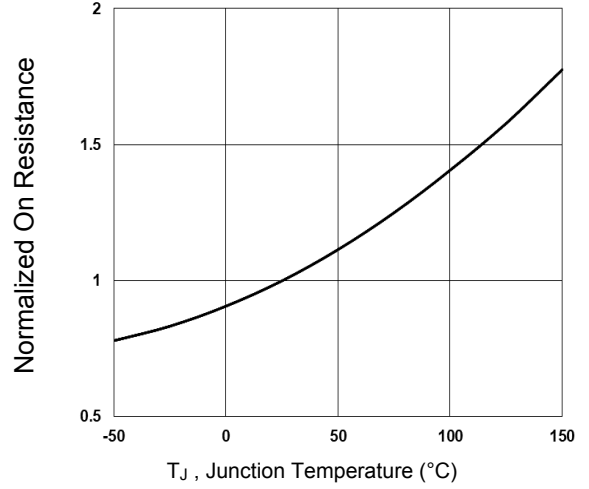


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

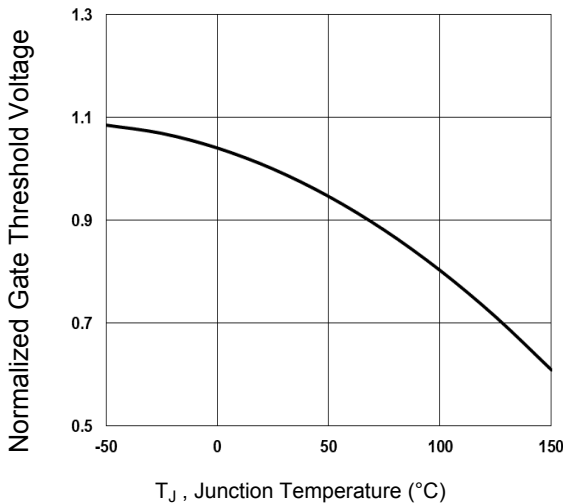


Fig.3 Normalized V_{th} vs. T_J

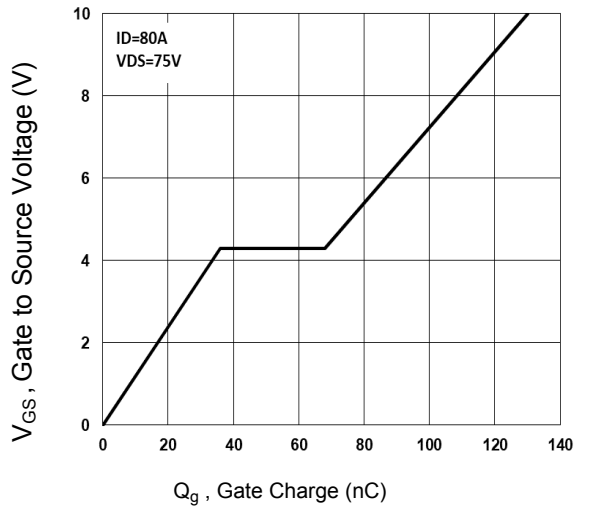


Fig.4 Gate Charge Waveform

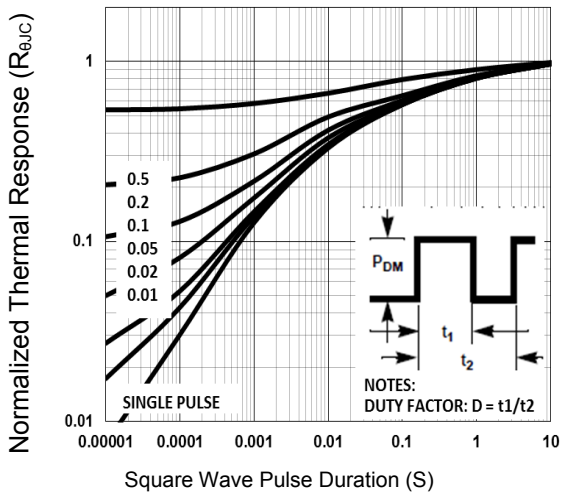


Fig.5 Normalized Transient Impedance

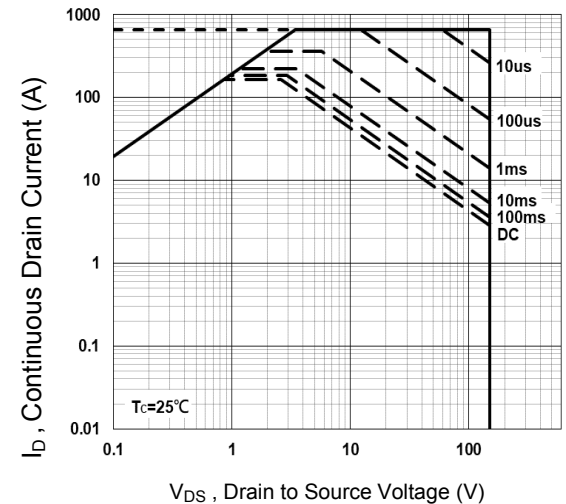


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

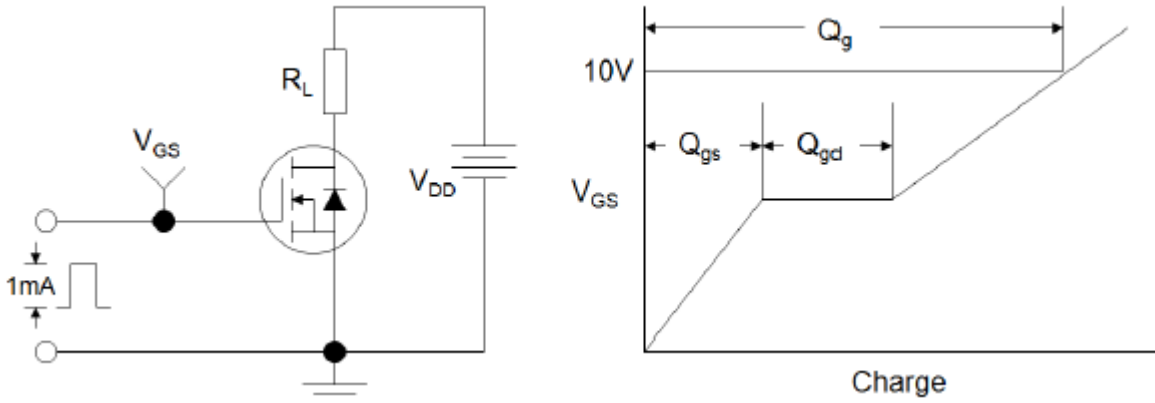


Figure 7. Gate Charge Test Circuit & Waveform

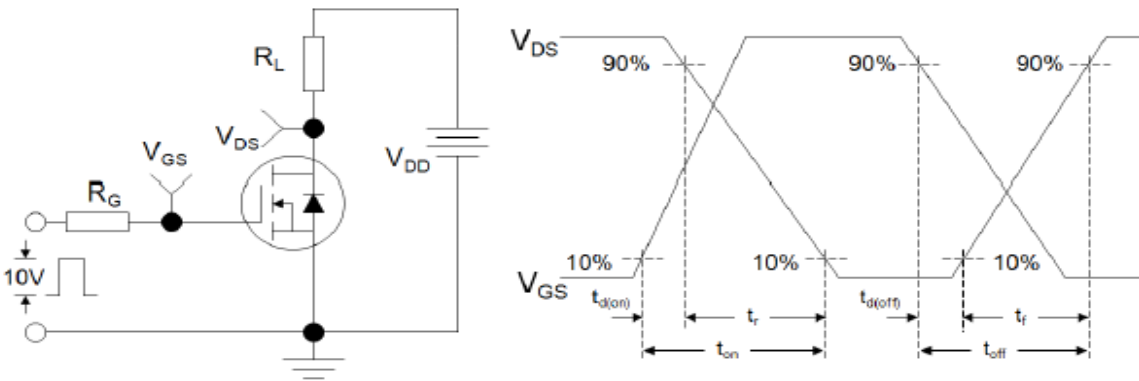


Figure 8. Resistive Switching Test Circuit & Waveforms

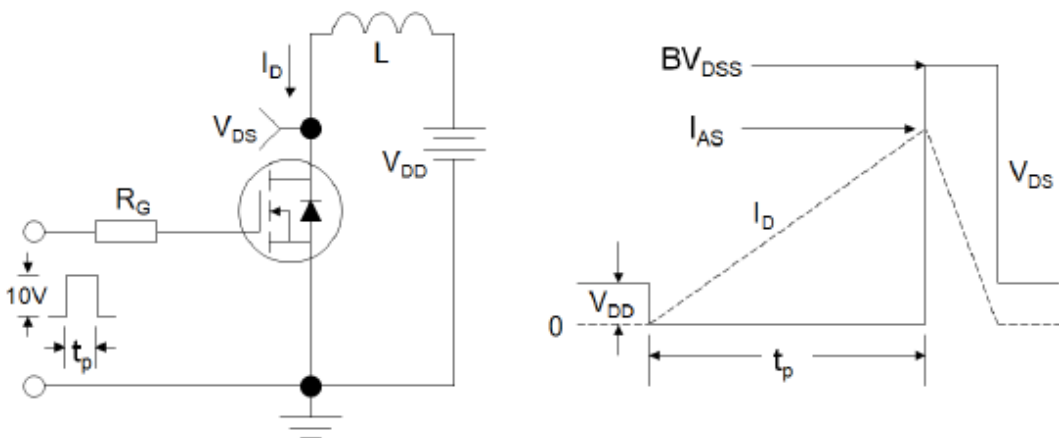
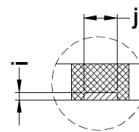
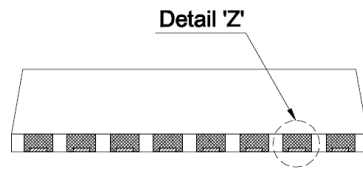
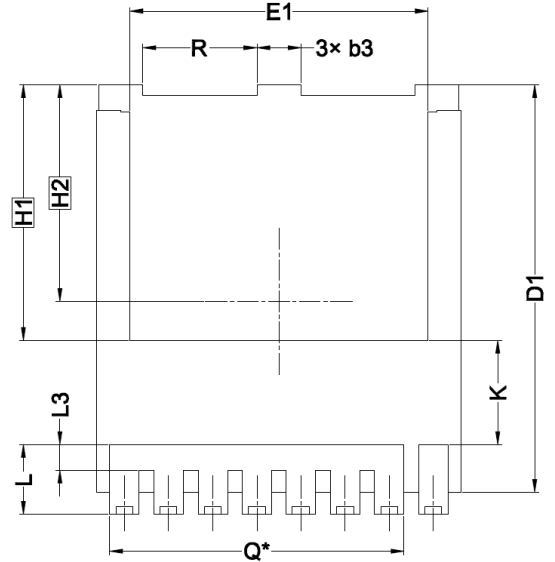
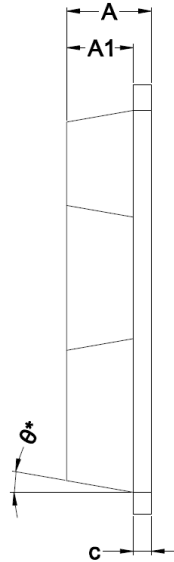
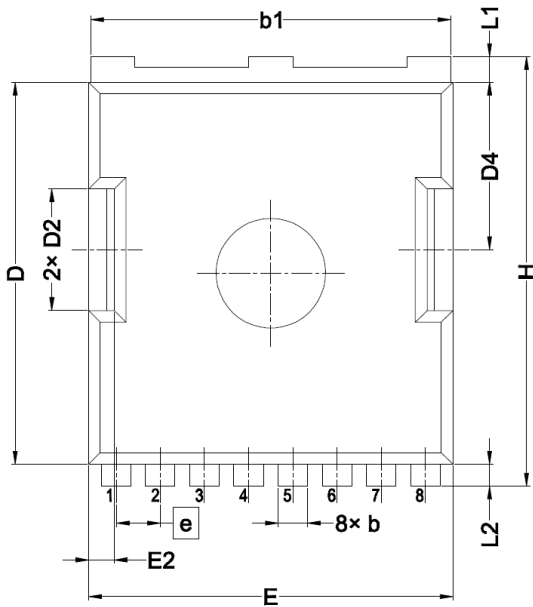


Figure 9. E_{AS} Circuit & Waveforms

Package Outline Dimensions

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Detail 'Z'

SYMBOL	mm			SYMBOL	mm		
	MIN	NOM	MAX		MIN	NOM	MAX
A	2.20	2.30	2.40	H	11.58	11.68	11.78
A1	1.70	1.80	1.90	H1	6.95 BSC		
b	0.70	0.80	0.90	H2	5.89 BSC		
b1	9.70	9.80	9.90	i	0.10 REF		
b3	1.10	1.20	1.30	j	0.46 REF		
c	0.40	0.50	0.60	K	2.80 REF		
D	10.28	10.38	10.48	L	1.40	1.90	2.10
D1	10.98	11.08	11.18	L1	0.60	0.70	0.80
D2	3.20	3.30	3.40	L2	0.50	0.60	0.70
D4	4.45	4.55	4.65	L3	0.30	0.70	0.80
E	9.80	9.90	10.00	N	8		
E1	8.00	8.10	8.20	Q	8.00 REF		
E2	0.60	0.70	0.80	R	3.00	3.10	3.20
e	1.20 BSC			θ	10° REF		