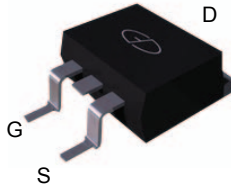
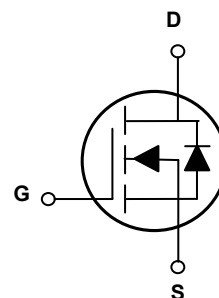


Main Product Characteristics

BV_{DSS}	150V
$R_{DS(ON)}$	5.8m Ω
I_D	150A



TO-263(D²PAK)



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 GSGT15150 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 ($T_c=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_c=25^\circ\text{C}$)	I_D	150	A
Drain Current-Continuous ($T_c=100^\circ\text{C}$)		95	
Drain Current-Pulsed ¹	I_{DM}	600	A
Single Pulse Avalanche Energy ²	E_{AS}	1350	mJ
Single Pulse Avalanche Current ²	I_{AS}	52	A
Power Dissipation ($T_c=25^\circ\text{C}$)	P_D	305	W
Power Dissipation-Derate above 25 $^\circ\text{C}$		2.44	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.41	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$

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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	4.8	5.8	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0	2.8	4.0	V
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=3A$	-	18	-	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	$V_G=V_D=0V, \text{Force Current}$	-	-	150	A
Pulsed Source Current ³	I_{SM}		-	-	300	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

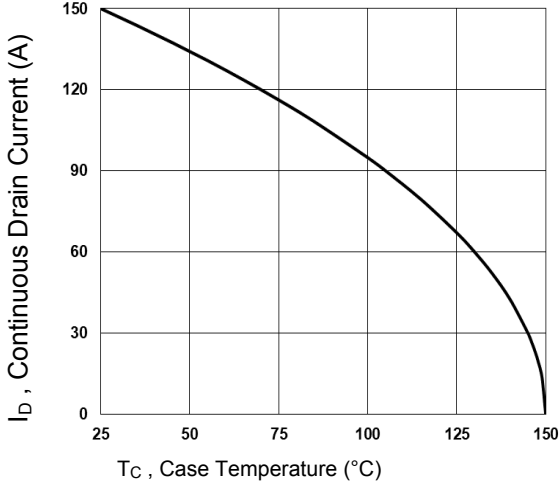


Fig.1 Continuous Drain Current vs. Tc

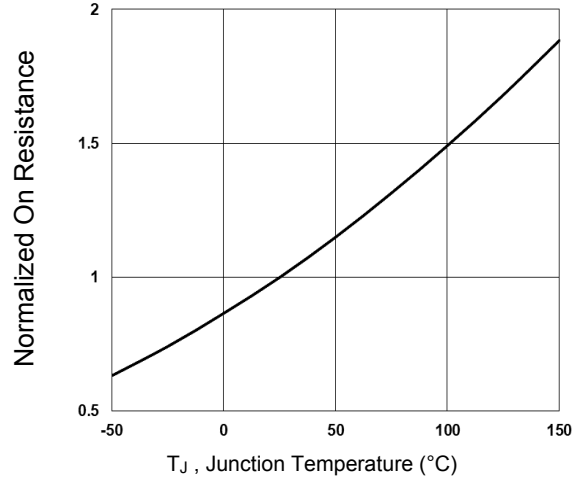


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

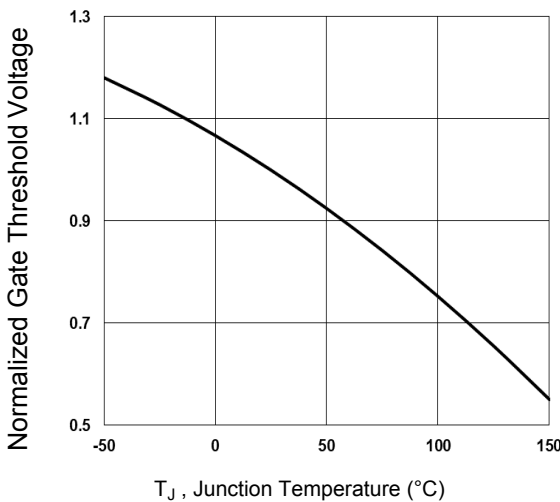


Fig.3 Normalized V_{th} vs. T_J

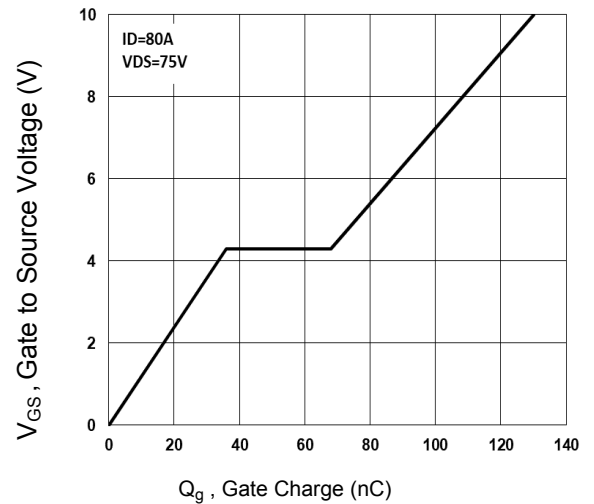


Fig.4 Gate Charge Waveform

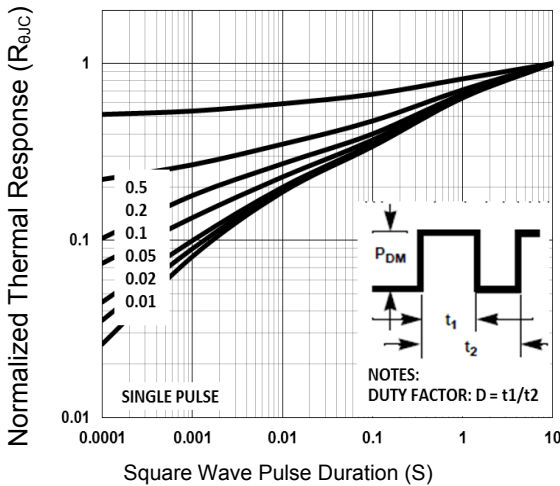


Fig.5 Normalized Transient Impedance

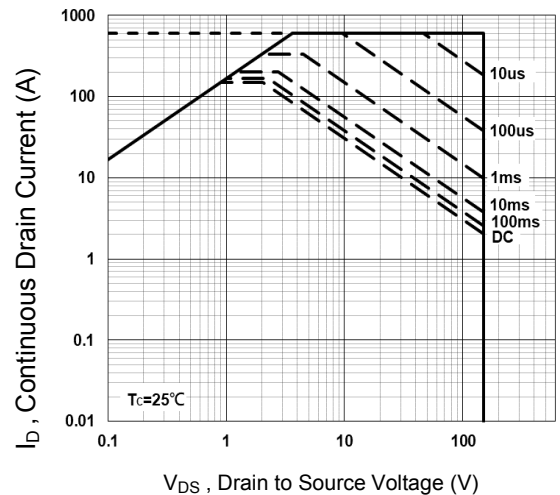


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

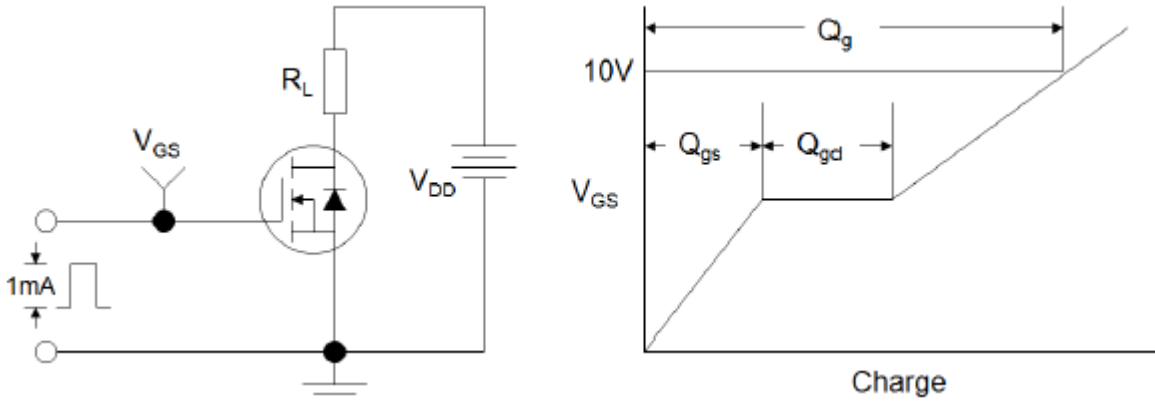


Figure 7. Gate Charge Test Circuit & Waveform

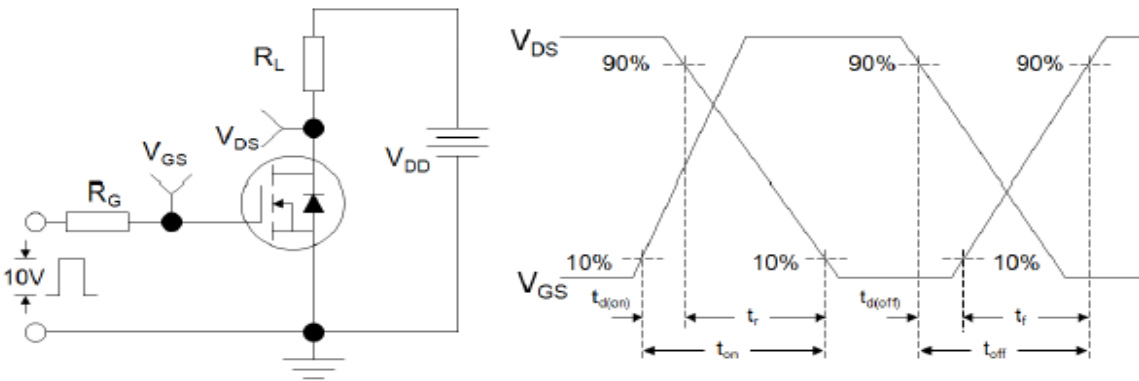


Figure 8. Resistive Switching Test Circuit & Waveforms

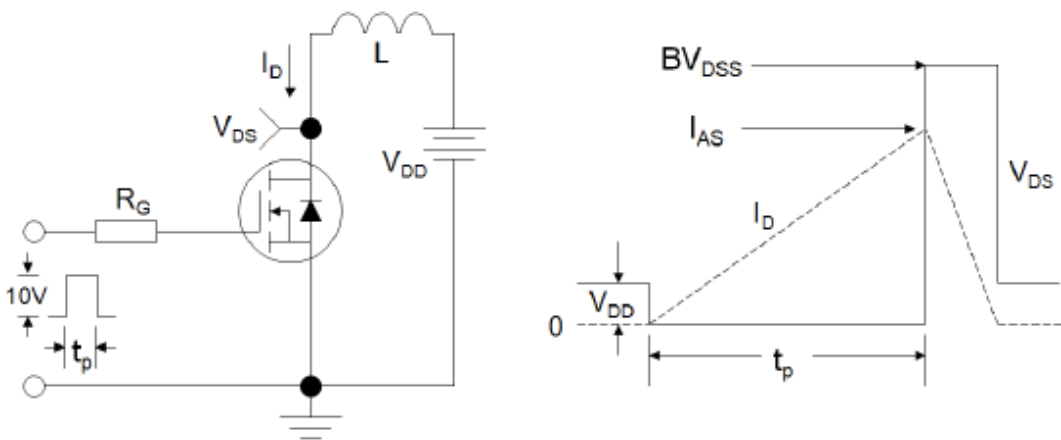
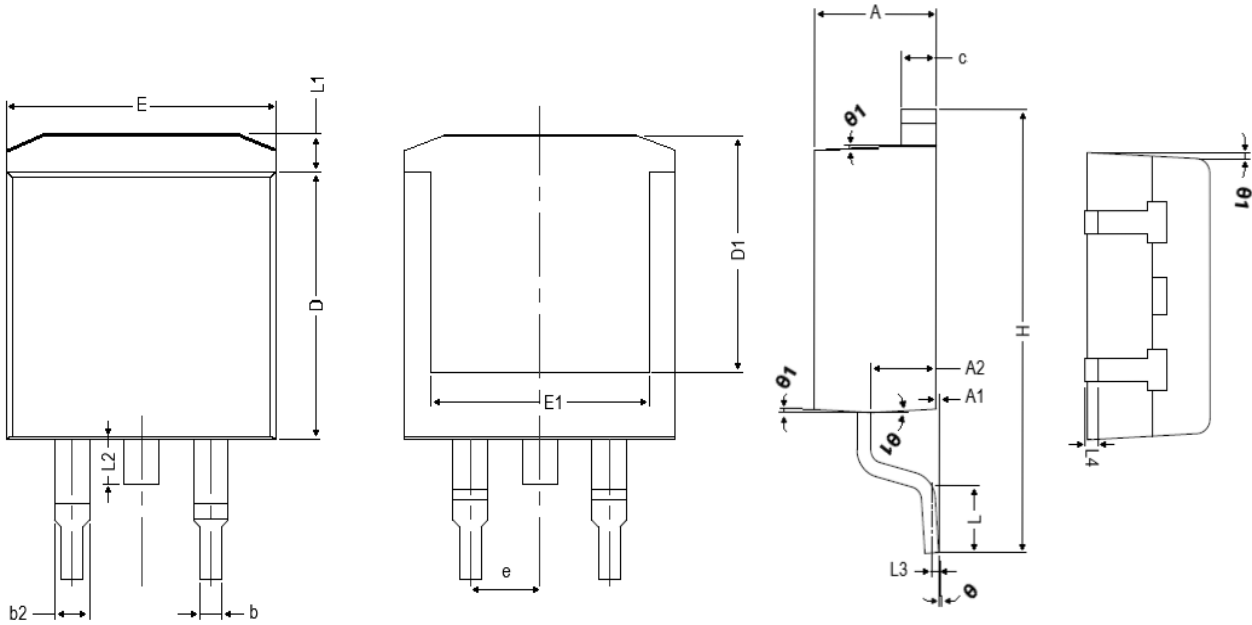


Figure 9. E_{AS} Circuit & Waveforms

Package Outline Dimensions

TO-263(D²PAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	4.850	4.250	0.191	0.167
A1	0.250	0.000	0.001	0.000
A2	2.900	2.350	0.114	0.093
b	0.950	0.700	0.037	0.028
b2	1.600	1.000	0.063	0.039
c	1.450	1.200	0.057	0.047
D	9.500	8.350	0.374	0.329
D1	9.150	6.400	0.360	0.252
E	10.500	9.600	0.413	0.378
E1	8.900	7.500	0.350	0.295
e	2.540 BSC		0.100 BSC	
H	15.900	14.600	0.626	0.575
L	2.800	2.000	0.110	0.079
L1	1.700	1.150	0.067	0.045
L2	2.100	1.400	0.083	0.055
L3	0.250 BSC		0.010 BSC	
L4	0.750	0.200	0.030	0.001
θ	0°	8°	0°	8°
θ1	5°	1°	5°	1°