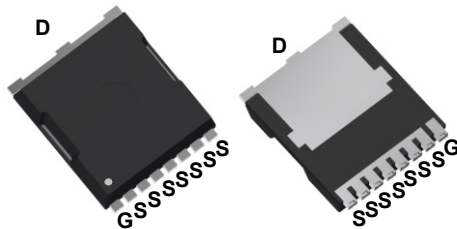
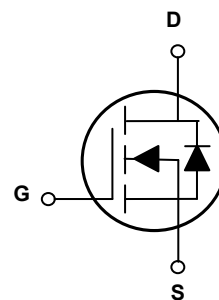


Main Product Characteristics

BV_{DSS}	40V
$R_{DS(ON)}$	1.5m Ω
I_D	250A



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Schematic Diagram

Features and Benefits

- Super 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 GSGTL04250 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}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_c=25^\circ\text{C}$)	I_D	250	A
Drain Current-Continuous ($T_c=100^\circ\text{C}$)		175	
Drain Current-Pulsed ¹	I_{DM}	1000	A
Single Pulse Avalanche Energy ⁵	E_{AS}	1692	mJ
Maximum Power Dissipation ($T_c=25^\circ\text{C}$)	P_D	300	W
Derating Factor		2	
Thermal Resistance, Junction-to-Case ²	$R_{\theta JC}$	0.5	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	T_J	-55 To +175	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To +175	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics³						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2	3	3.8	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=100A$	-	1.2	1.5	m Ω
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=100A$	-	90	-	S
Dynamic and Switching Characteristics⁴						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, F=1MHz$	-	5834.6	-	pF
Output Capacitance	C_{oss}		-	2320.5	-	
Reverse Transfer Capacitance	C_{rss}		-	70	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=20V, R_G=1.6\Omega, V_{GS}=10V, I_D=100A$	-	14.5	-	nS
Turn-On Rise Time	t_r		-	8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	58	-	
Turn-Off Fall Time	t_f		-	10	-	
Total Gate Charge	Q_g	$V_{DS}=20V, I_D=100A, V_{GS}=10V$	-	91	-	nC
Gate-Source Charge	Q_{gs}		-	29.4	-	
Gate-Drain Charge	Q_{gd}		-	19	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V, I_S=100A$	-	-	1.2	V
Continuous Source Current ²	I_S	-	-	-	250	A
Reverse Recovery Time	t_{rr}	$T_J=25^\circ\text{C}, I_S=I_F, di/dt=100A/\mu s^3$	-	-	38	nS
Reverse Recovery Charge	Q_{rr}		-	-	125	nC

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production
5. EAS condition : $T_J=25^\circ\text{C}, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25\Omega$

Typical Electrical and Thermal Characteristic Curves

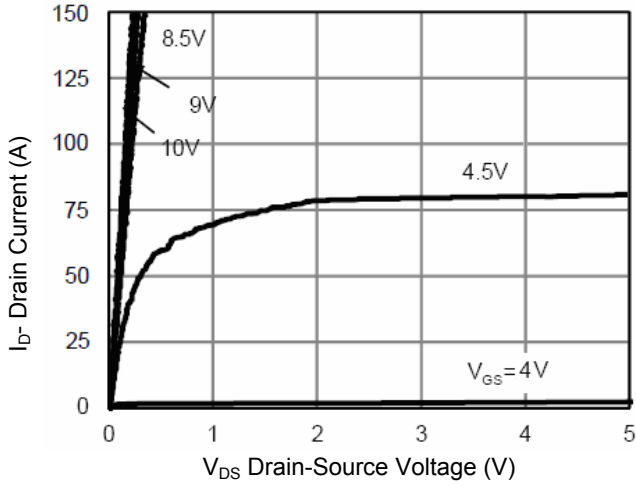


Figure 1. Output Characteristics

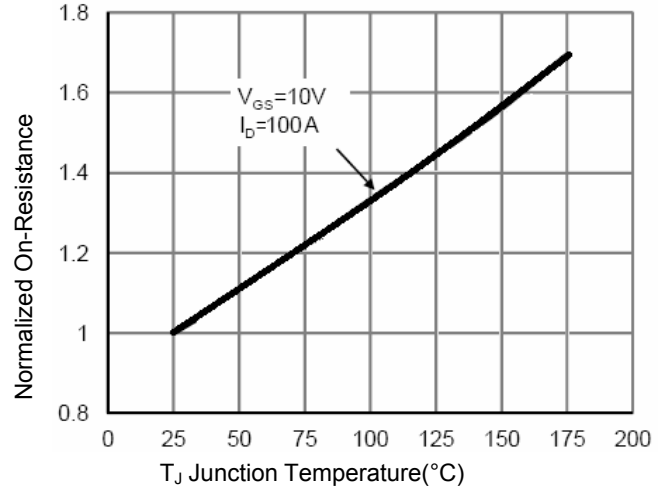


Figure 2. $R_{DS(ON)}$ - Junction Temperature

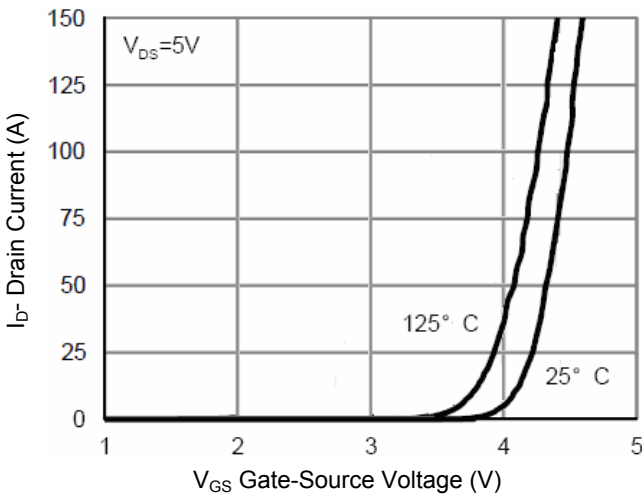


Figure 3. Transfer Characteristics

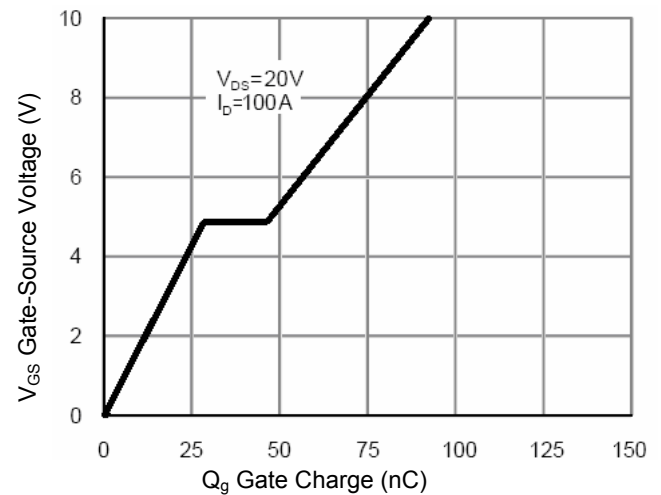


Figure 4. Gate Charge

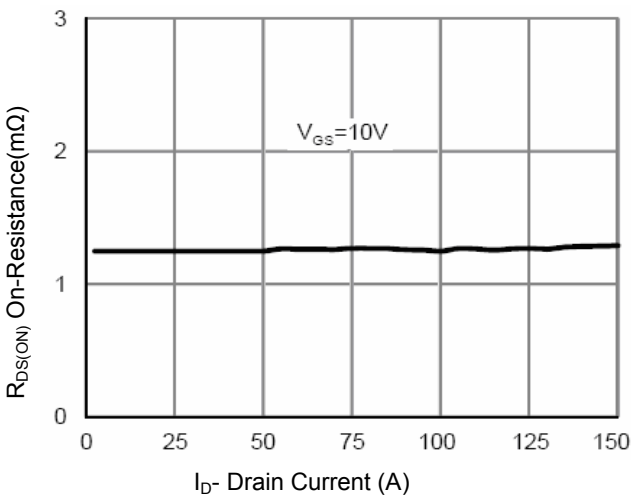


Figure 5. $R_{DS(ON)}$ - Drain Current

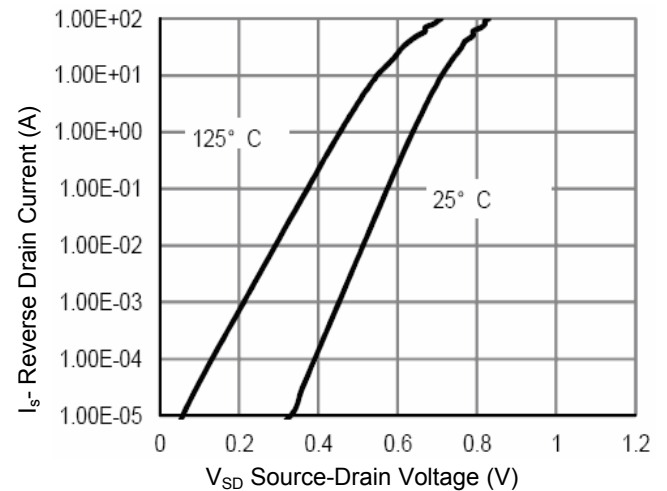


Figure 6. Source- Drain Diode Forward

Typical Electrical and Thermal Characteristic Curves

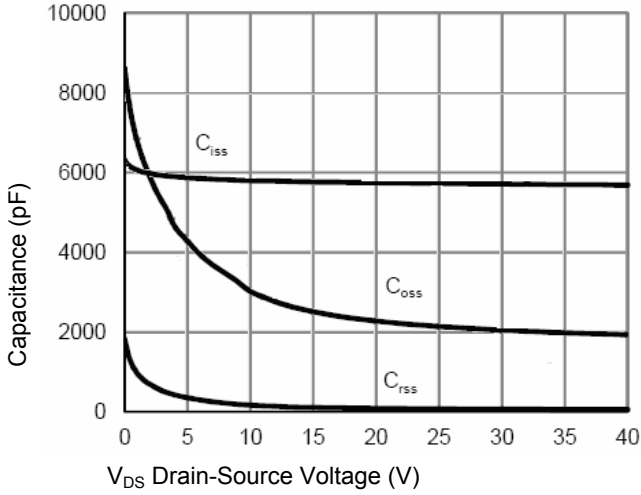


Figure 7. Capacitance vs V_{DS}

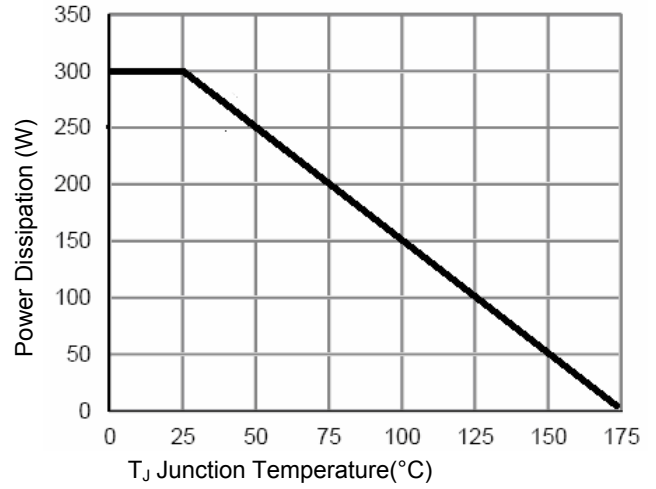


Figure 8. Power De-rating

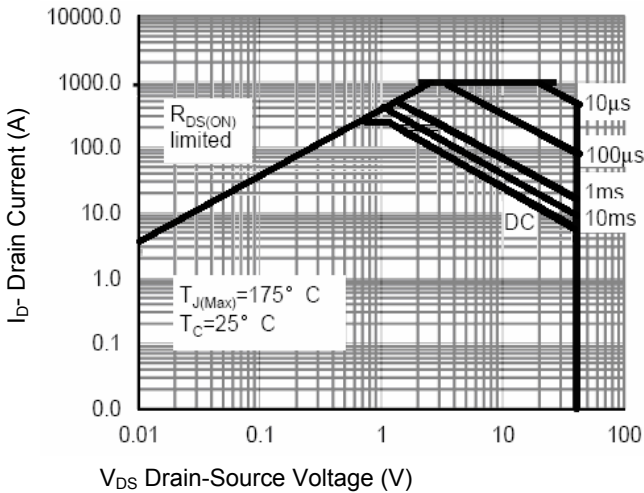


Figure 9. Safe Operation Area

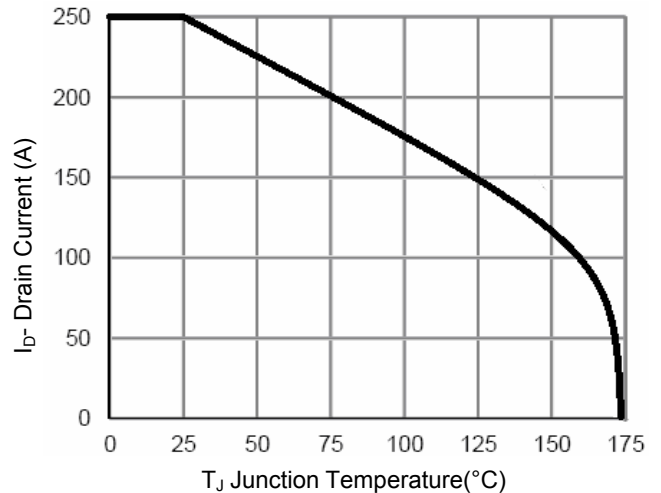


Figure 10. Current De-rating

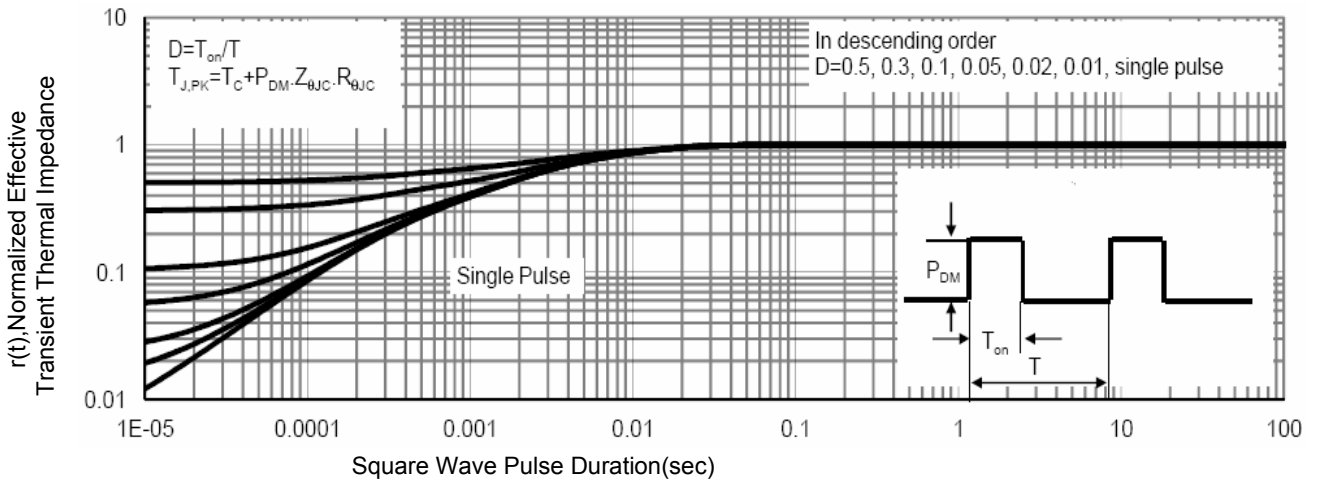
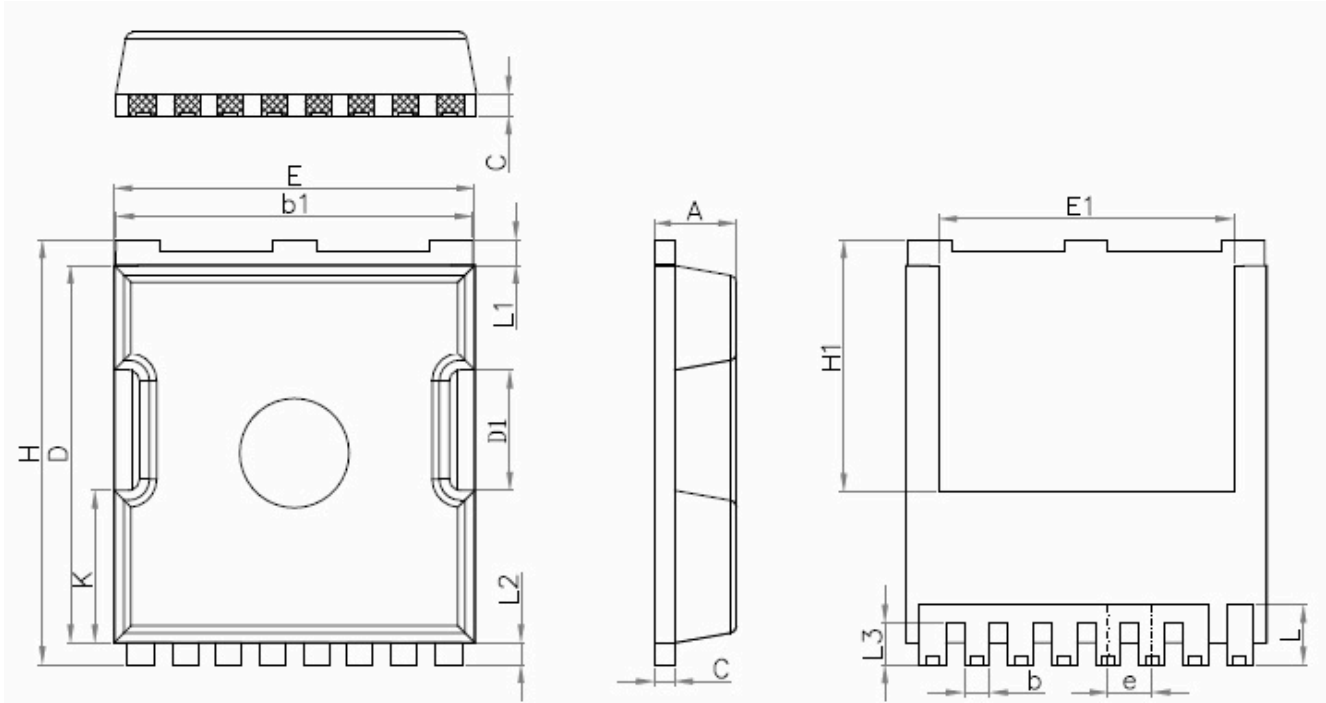


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions

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Symbol	Millimeters		
	Min.	Nom.	Max.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
b1	9.70	9.80	9.90
C	0.50	0.60	0.70
D	10.30	10.40	10.50
D1	3.15	3.3	3.45
E	9.70	9.90	10.10
E1	8.00	8.10	8.20
e	1.10	1.20	1.30
H	11.6	11.7	11.8
H1	6.85	6.95	7.05
K	4.08	4.18	4.28
L	1.60	1.65	2.10
L1	0.60	0.70	0.80
L2	0.50	0.60	0.70
L3	1.05	1.20	1.30