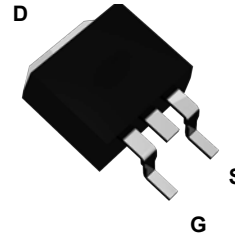
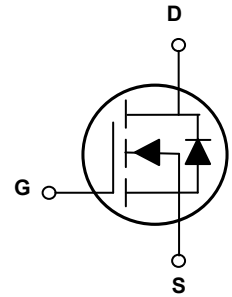


Main Product Characteristics

BV_{DSS}	100V
$R_{DS(ON)}$	1.45m Ω
I_D	240A



TO-263 (D²PAK)



Schematic Diagram

Features and Benefits

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



Description

The GSGT10240 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}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	240	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		170	A
Drain Current-Pulsed	I_{DM}	960	A
Maximum Power Dissipation	P_D	340	W
Derating Factor		2.27	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ⁴	E_{AS}	2784	mJ
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.44	$^\circ\text{C}/\text{W}$
Storage Temperature Range	T_{STG}	-55 To +175	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-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}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics²						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=120A$	-	1.45	2.3	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=120A$	-	200	-	S
Dynamic Characteristics³						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, F=1.0MHz$	-	17000	-	pF
Output Capacitance	C_{oss}		-	1500	-	
Reverse Transfer Capacitance	C_{rss}		-	77	-	
Switching Characteristics³						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, I_D=120A, V_{GS}=10V, R_G=1.6\Omega$	-	37	-	nS
Turn-On Rise Time	t_r		-	29	-	
Turn-Off Delay Time	$t_{d(off)}$		-	82	-	
Turn-Off Fall Time	t_f		-	34	-	
Total Gate Charge	Q_g	$V_{DS}=50V, I_D=120A, V_{GS}=10V$	-	252	-	nC
Gate-Source Charge	Q_{gs}		-	72	-	
Gate-Drain Charge	Q_{gd}		-	63	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V, I_S=120A$	-	-	1.2	V
Continuous Source Current ²	I_S	-	-	-	240	A
Reverse Recovery Time	t_{rr}	$I_F=120A, di/dt=100A/\mu s^2, T_J=25^\circ C$	-	105	-	nS
Reverse Recovery Charge	Q_{rr}	$T_J=25^\circ C$	-	290	-	nC

Note :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
3. Guaranteed by design, not subject to production
4. EAS condition : $T_J=25^\circ C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25\Omega$

Typical Electrical and Thermal Characteristic Curves

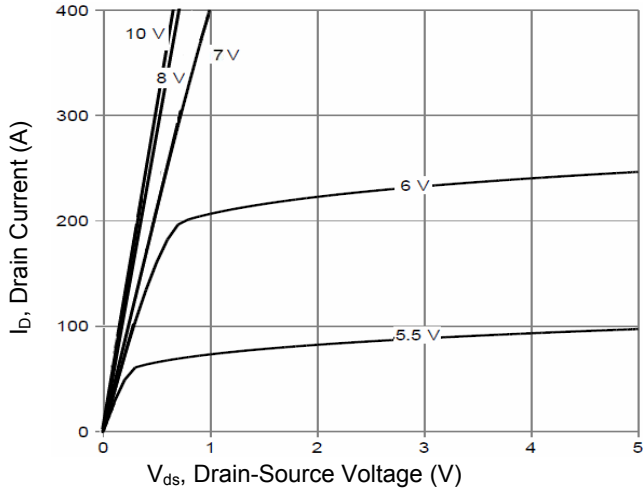


Figure 1. Output Characteristics

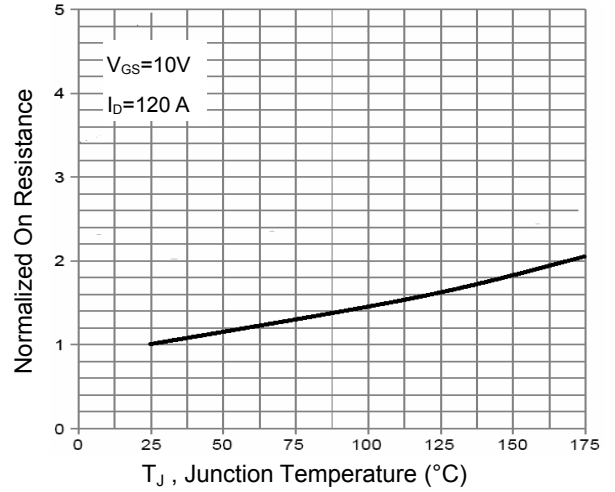


Figure 2. R_{Dson} -Junction Temperature

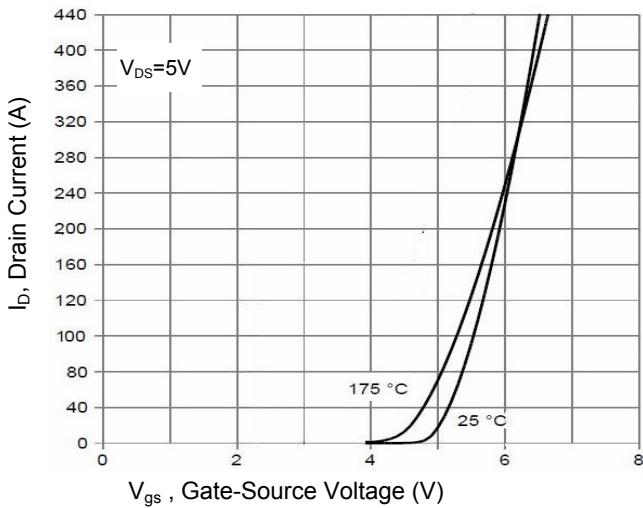


Figure 3. Transfer Characteristics

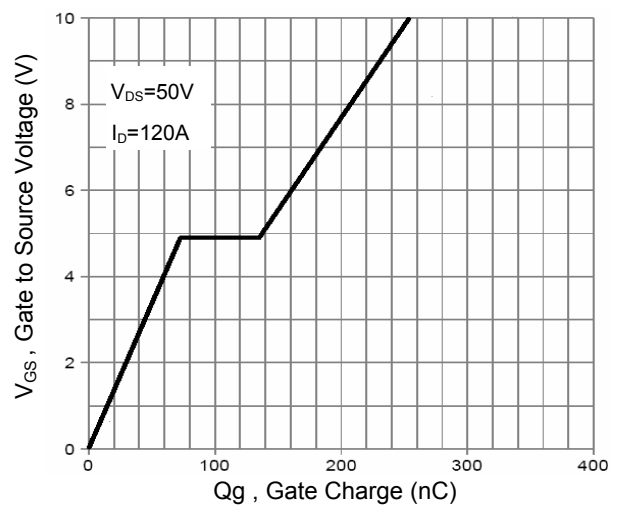


Figure 4. Gate Charge

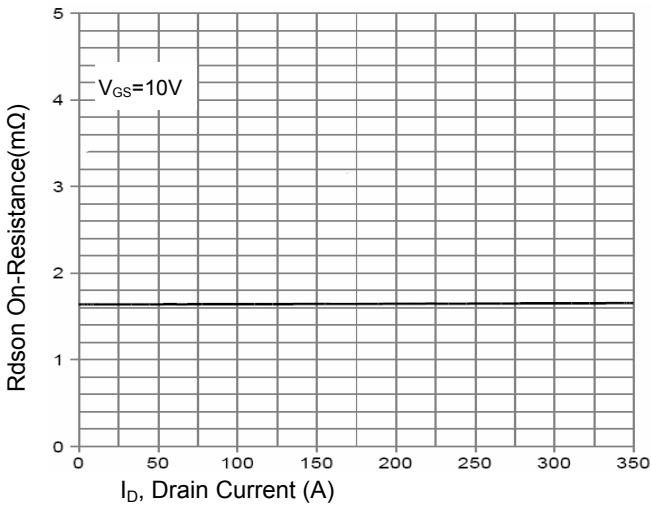


Figure 5. R_{Dson} - Drain Current

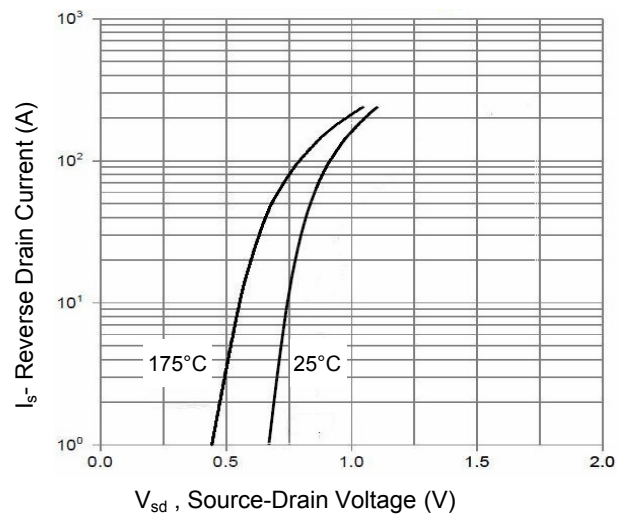


Figure 6. Source- Drain Diode Forward

Typical Electrical and Thermal Characteristic Curves

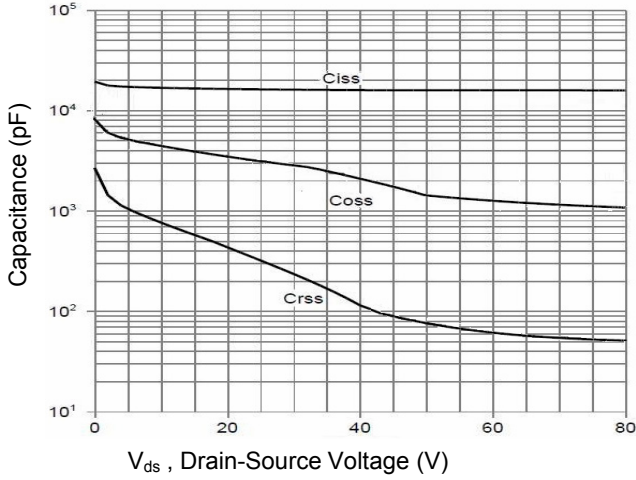


Figure 7. Capacitance vs. V_{DS}

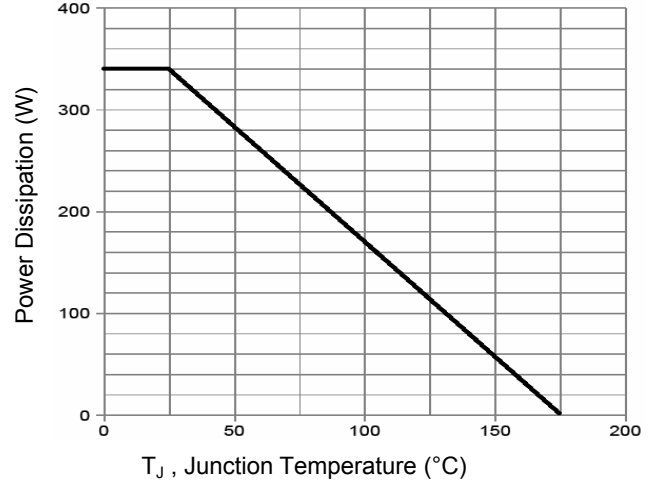


Figure 8. Power De-rating

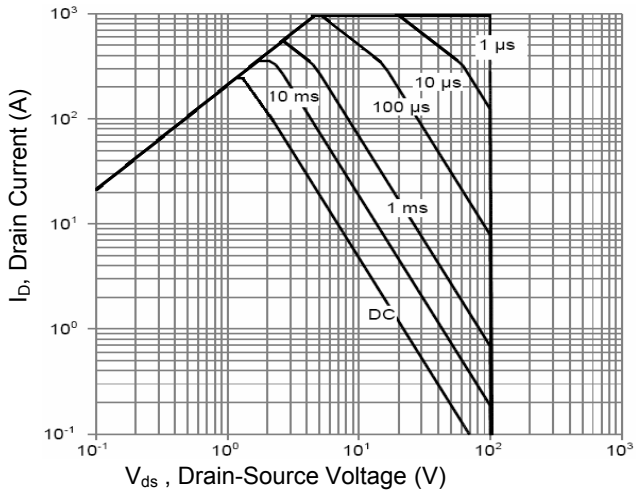


Figure 9. Safe Operation Area

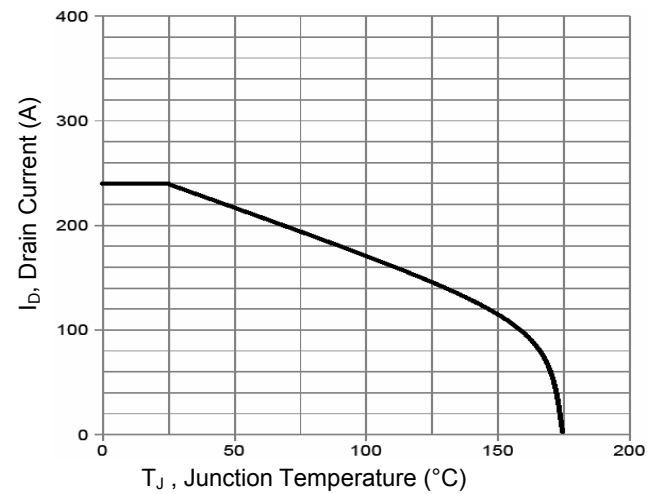


Figure 10. Current De-rating

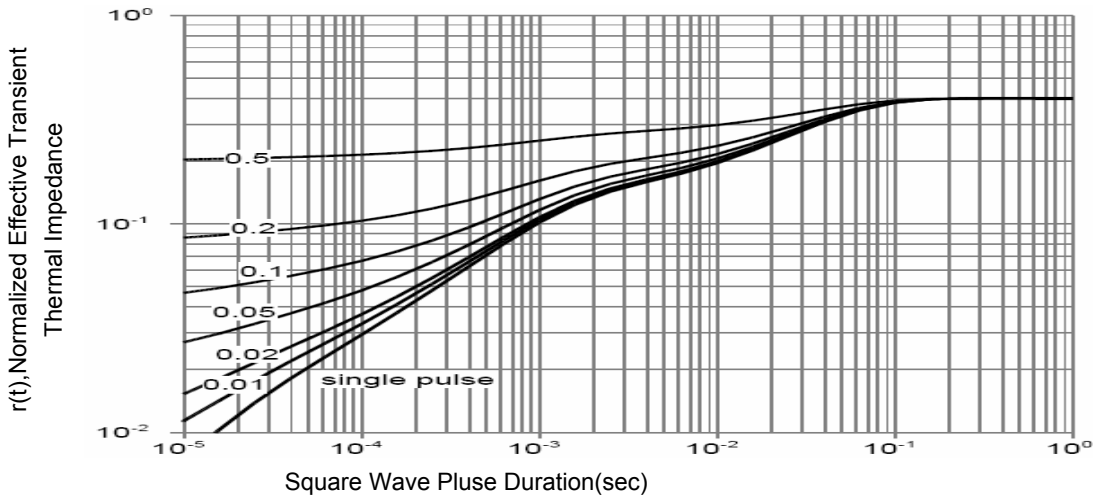
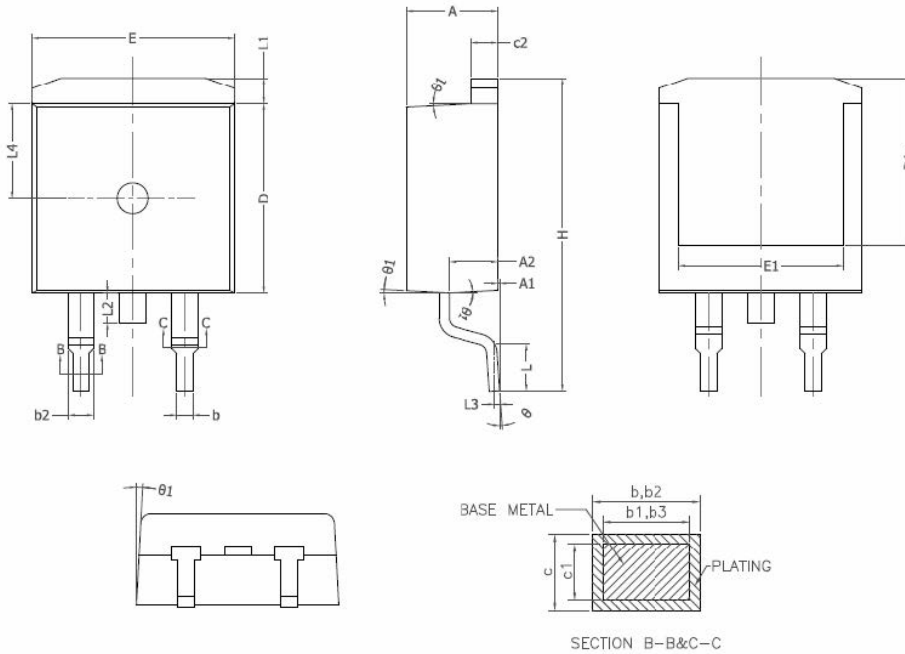


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (TO-263/D²PAK)



COMMON DIMENSIONS
 (UNITS OF MEASURE =MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.40	4.50	4.60
A1	0	0.10	0.25
A2	2.20	2.40	2.60
b	0.76	—	0.89
b1	0.75	0.80	0.85
b2	1.23	—	1.37
b3	1.22	1.27	1.32
c	0.47	—	0.60
c1	0.46	0.51	0.56
c2	1.25	1.30	1.35
D	9.10	9.20	9.30
D1	8.00	—	—
E	9.80	9.90	10.00
E1	7.80	—	—
e	2.54 BSC		
H	14.90	15.30	15.70
L	2.00	2.30	2.60
L1	1.17	1.27	1.40
L2	—	—	1.75
L3	0.25BSC		
L4	4.60 REF		
θ	0°	—	8°
θ1	1°	3°	5°