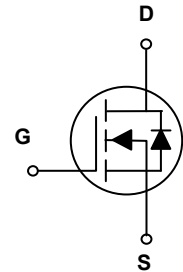


Main Product Characteristics

$V_{(BR)DSS}$	40V
$R_{DS(ON)}$	7.2m Ω (Max.)
I_D	75A



TO-252 (DPAK)



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
- AEC-Q101 qualified



Description

The GSGD7R204HAU 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 ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$)	I_D	75	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		47	A
Pulsed Drain Current ($T_C=25^\circ\text{C}$) ¹	I_{DM}	312	A
Power Dissipation ($T_C=25^\circ\text{C}$) ²	P_D	68	W
Single Pulse Avalanche Energy	E_{AS}	132	mJ
Single Pulse Current	I_{AS}	23	A
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	40	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.21	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	$^\circ\text{C}$
Soldering Temperature (SMD)	T_{sold}	260	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	40	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V, T _J =25°C	-	-	1.0	μA
		V _{DS} =40V, V _{GS} =0V, T _J =125°C	-	2.0	-	
Gate-to-Source Forward Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	5.8	7.2	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.1	-	2.8	V
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =20V, f=1MHz	-	825	-	pF
Output Capacitance	C _{oss}		-	275	-	
Reverse Transfer Capacitance	C _{rss}		-	19	-	
Total Gate Charge ^{3,4}	Q _g	I _D =20A, V _{DD} =20V, V _{GS} =10V	-	49	-	nC
Gate-to-Source Charge ^{3,4}	Q _{gs}		-	10.2	-	
Gate-to-Drain ("Miller") Charge ^{3,4}	Q _{gd}		-	10.2	-	
Gate-to-Plateau ^{3,4}	V _{plateau}		-	3.9	-	V
Turn-On Delay Time ^{3,4}	t _{d(on)}	V _{DD} =20V, V _{GS} =10V, R _G =6Ω, I _D =20A	-	10	-	nS
Rise Time ^{3,4}	t _r		-	29	-	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	39	-	
Fall Time ^{3,4}	t _f		-	7	-	
Gate Resistance	R _g	f=1MHz	-	1.2	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	75	A
Diode Pulse Current	I _{S,pulse}		-	-	312	A
Diode Forward Voltage	V _{SD}	I _S =5A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time ³	t _{rr}	I _S =20A, V _{GS} =0V, V _R =30V, dI _F /dt=100A/us	-	11.2	-	nS
Reverse Recovery Charge ³	Q _{rr}		-	5.1	-	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=40V, V_{GS}=10V, L=0.5mH, R_G=25Ω, starting T_J=25°C.
3. Pulse test: Pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

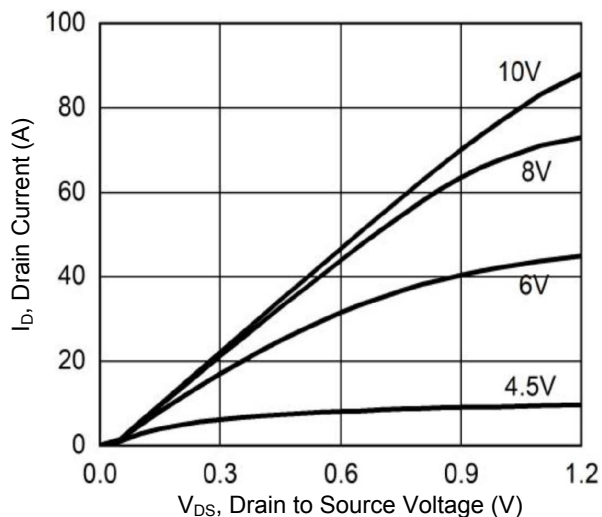


Figure 1. Output Characteristics

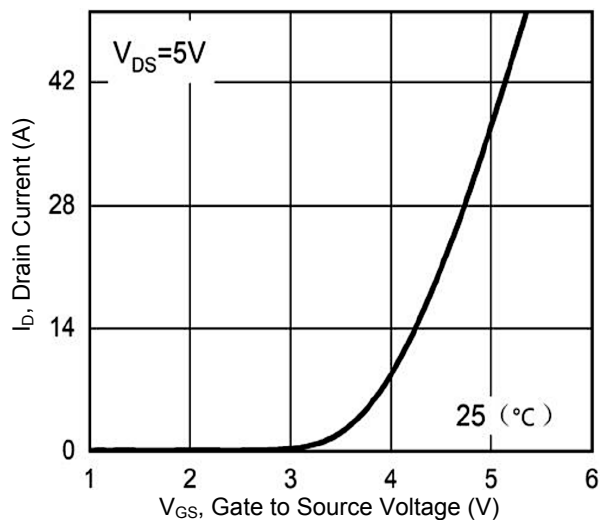


Figure 2. Transfer Characteristics

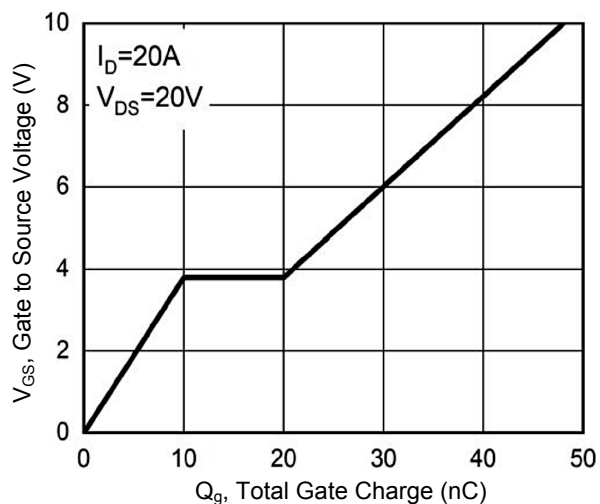


Figure 3. Gate Charge Characteristics

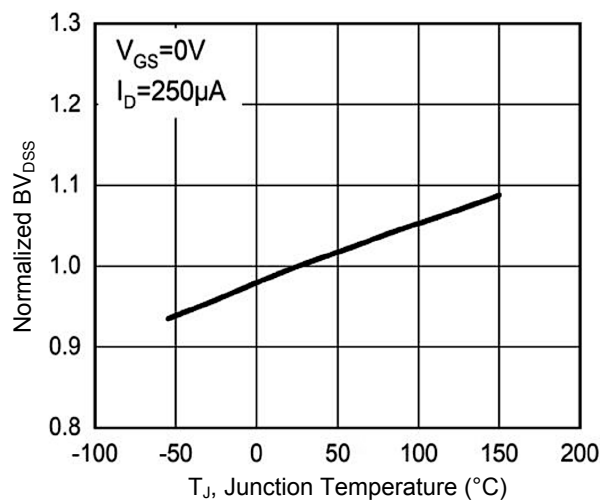


Figure 4. Normalized BV_{DS} vs. T_J

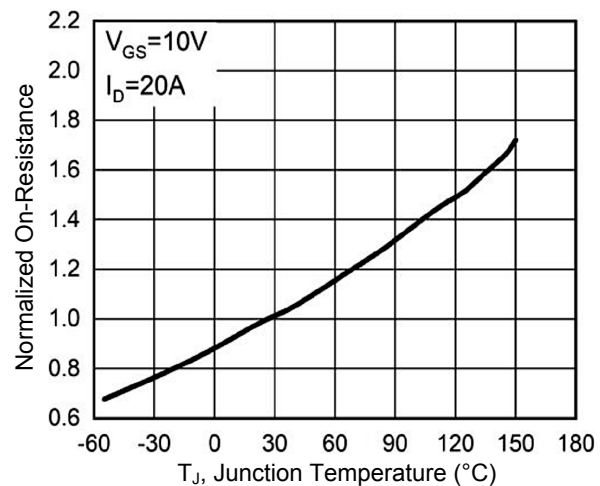


Figure 5. Normalized On Resistance vs. T_J

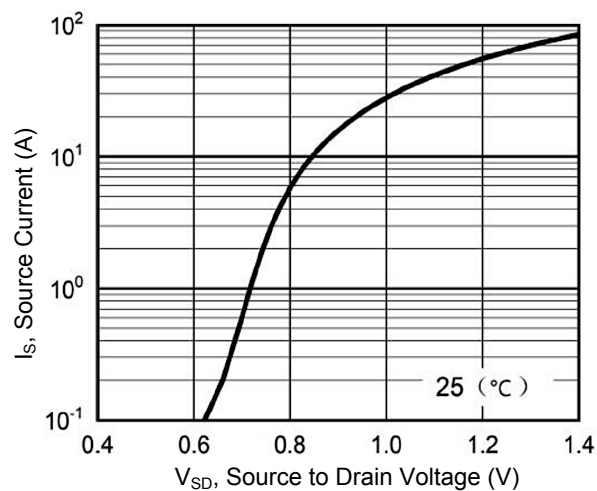


Figure 6. Body Diode Characteristics

Typical Electrical and Thermal Characteristic Curves

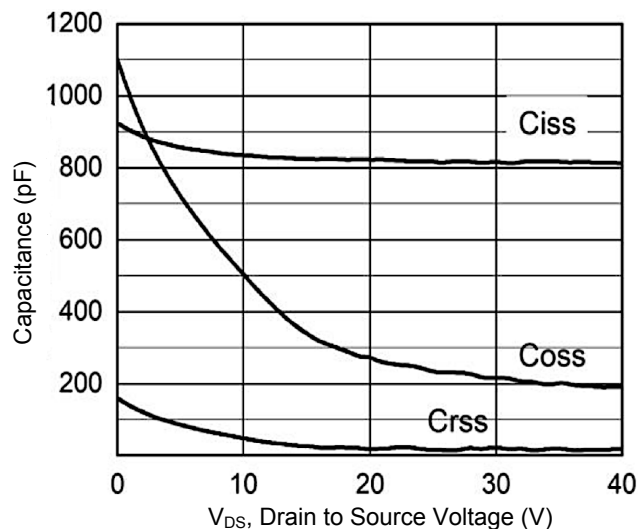


Figure 7. Capacitance Characteristics

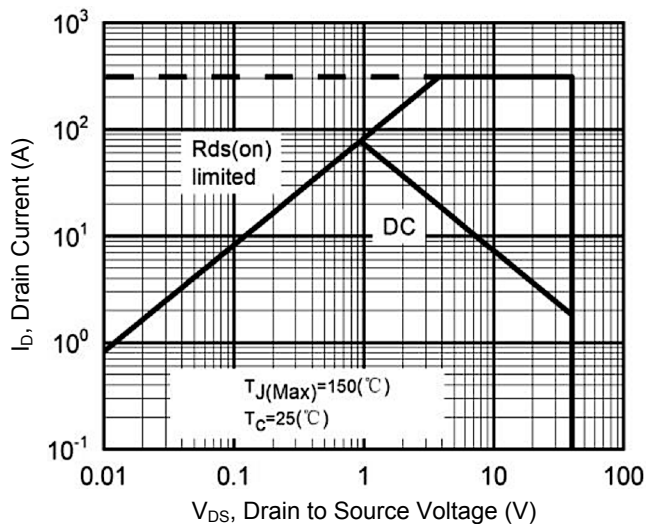
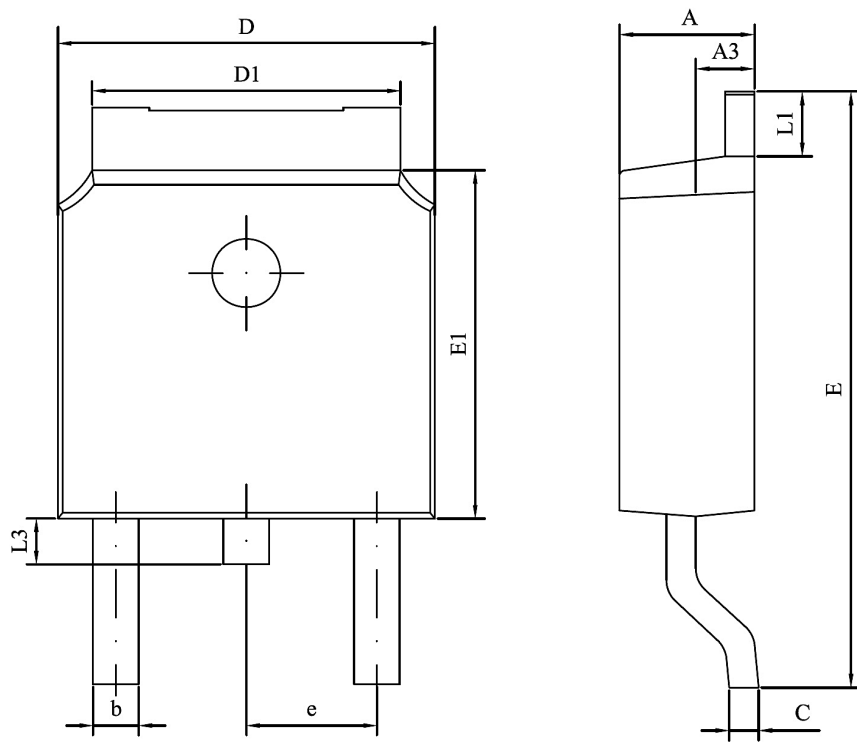


Figure 8. Safe Operation Area

Package Outline Dimensions TO-252 (DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.150	2.400	0.085	0.094
A3	0.900	1.100	0.035	0.043
b	0.500	0.900	0.020	0.035
C	0.400	0.650	0.016	0.026
D	6.300	6.900	0.248	0.272
D1	4.950	5.500	0.195	0.217
E	9.400	10.410	0.370	0.410
E1	5.900	6.300	0.232	0.248
e	2.286 BSC		0.090 BSC	
L1	0.890	1.270	0.035	0.050
L3	0.600	1.100	0.024	0.043

Order Information

Device	Package	Marking	Carrier	Quantity
GSGD7R204HAU	TO-252 (DPAK)	D7R204H	Tape & Reel	2,500 Pcs / Reel