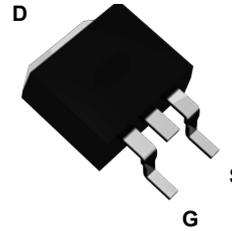
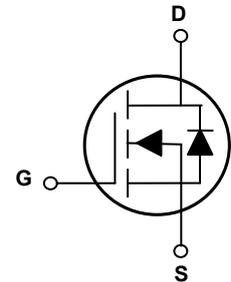


### Main Product Characteristics

$V_{(BR)DSS}$	200V
$R_{DS(ON)}$	24mΩ (Max.)
$I_D$	72A



TO-263 (D<sup>2</sup>PAK)



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 GSFT24020AU 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<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	200	V
Gate-to-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current, @ Steady-State (T <sub>C</sub> =25°C)	$I_D$	72	A
Continuous Drain Current, @ Steady-State (T <sub>C</sub> =100°C)		45	A
Pulsed Drain Current (T <sub>C</sub> =25°C) <sup>1</sup>	$I_{DM}$	288	A
Power Dissipation (T <sub>C</sub> =25°C) <sup>2</sup>	$P_D$	240	W
Single Pulse Avalanche Energy	$E_{AS}$	140	mJ
Single Pulse Avalanche Current	$I_{AS}$	53	A
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{θJA}$	60	°C/W
Thermal Resistance, Junction-to-Case	$R_{θJC}$	0.63	°C/W
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to +175	°C

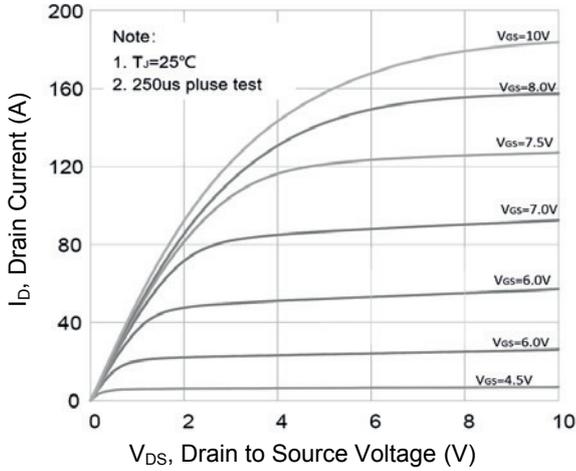
### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	200	-	-	V
Drain-to-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	-	-	1.0	μA
		V <sub>DS</sub> =200V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C	-	10	-	
Gate-to-Source Forward Leakage	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =20V	-	-	100	nA
		V <sub>DS</sub> =0V, V <sub>GS</sub> =-20V	-	-	-100	
Static Drain-to-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =46A	-	19.4	24	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	3.0	-	5.0	V
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1MHz	-	2655	-	pF
Output Capacitance	C <sub>oss</sub>		-	1593	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	37	-	
Total Gate Charge <sup>3,4</sup>	Q <sub>g</sub>	I <sub>D</sub> =46A, V <sub>DD</sub> =100V, V <sub>GS</sub> =10V	-	36	-	nC
Gate-to-Source Charge <sup>3,4</sup>	Q <sub>gs</sub>		-	22	-	
Gate-to-Drain ("Miller") Charge <sup>3,4</sup>	Q <sub>gd</sub>		-	4.3	-	
Gate Plateau <sup>3,4</sup>	V <sub>plateau</sub>		-	6.9	-	V
Turn-On Delay Time <sup>3,4</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> =100V, V <sub>GS</sub> =10V, R <sub>G</sub> =2.5Ω, I <sub>D</sub> =46A	-	22	-	nS
Rise Time <sup>3,4</sup>	t <sub>r</sub>		-	80	-	
Turn-Off Delay Time <sup>3,4</sup>	t <sub>d(off)</sub>		-	34	-	
Fall Time <sup>3,4</sup>	t <sub>f</sub>		-	9.6	-	
Gate Resistance	R <sub>g</sub>	f=1MHz	-	4.4	-	Ω
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode)	I <sub>S</sub>	T <sub>C</sub> =25°C, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	72	A
Diode Pulse Current	I <sub>S,pulse</sub>		-	-	288	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =46A, V <sub>GS</sub> =0V	-	-	1.4	V
Reverse Recovery Time <sup>3</sup>	T <sub>rr</sub>	I <sub>S</sub> =46A, V <sub>GS</sub> =0V, dI <sub>F</sub> /dt=100A/us	-	128	-	nS
Reverse Recovery Charge <sup>3</sup>	Q <sub>rr</sub>		-	0.59	-	μC

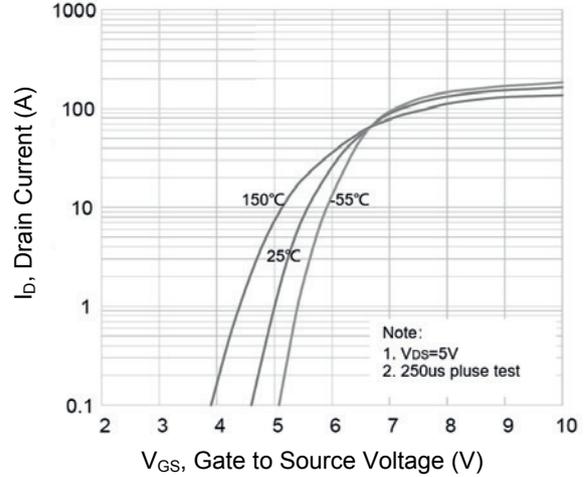
Notes:

1. Pulse time 5us.
2. The dissipated power value will change with the temperature. When it is greater than 25°C, the dissipated power will decrease by 1.67 W/°C for every 1 degree of temperature rise.
3. Pulse test: Pulse width ≤300us, duty cycle ≤2%.
4. Essentially independent of operating temperature.

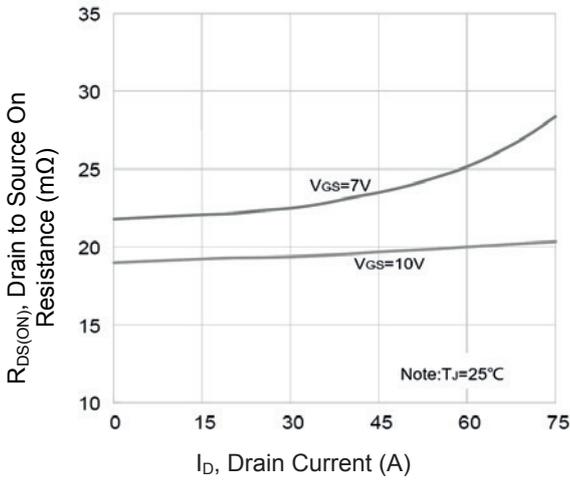
**Typical Electrical and Thermal Characteristic Curves**



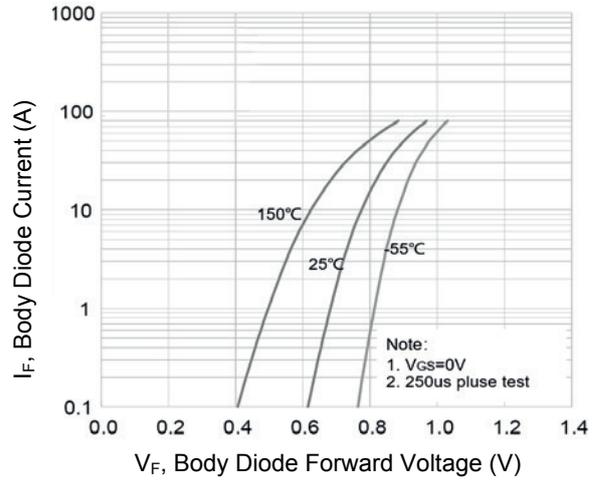
**Figure 1. Typical Output Characteristics**



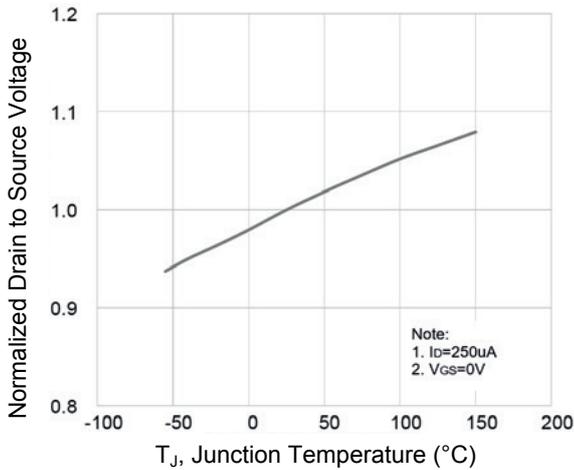
**Figure 2. Transfer Characteristics**



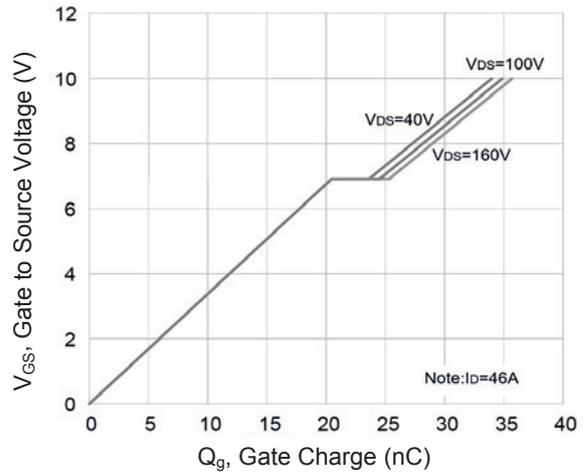
**Figure 3.  $R_{DS(ON)}$  vs. Drain Current**



**Figure 4. Body Diode Characteristics**

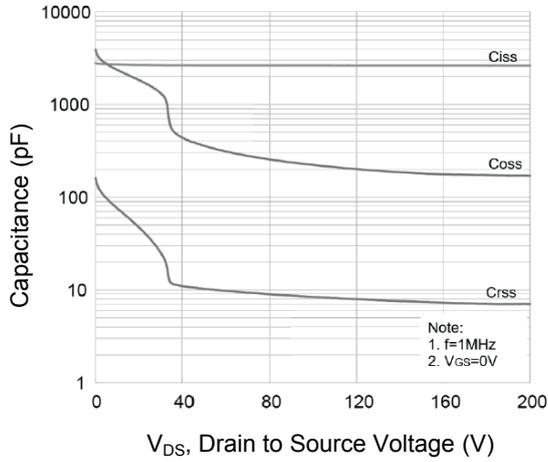


**Figure 5. Normalized  $BV_{DSS}$  vs.  $T_J$**

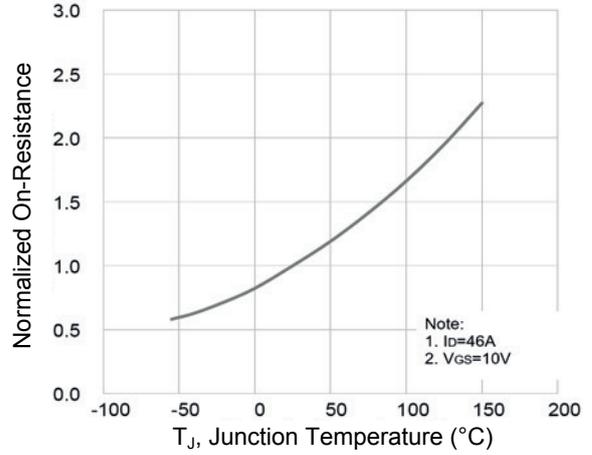


**Figure 6. Gate Charge**

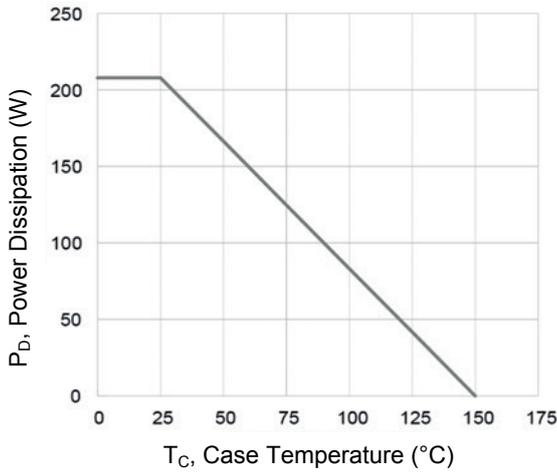
**Typical Electrical and Thermal Characteristic Curves**



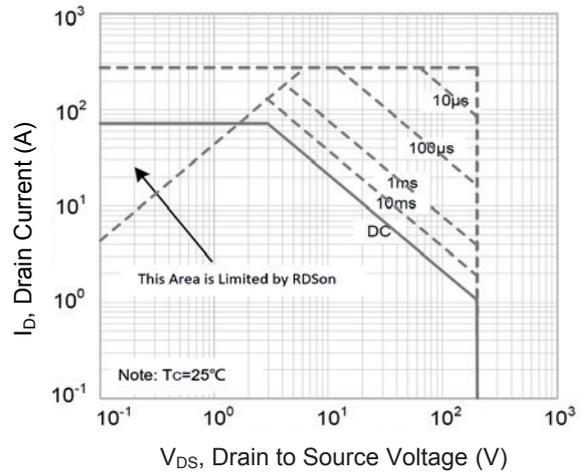
**Figure 7. Capacitance Characteristics**



**Figure 8. Normalized  $R_{DS(ON)}$  vs.  $T_J$**

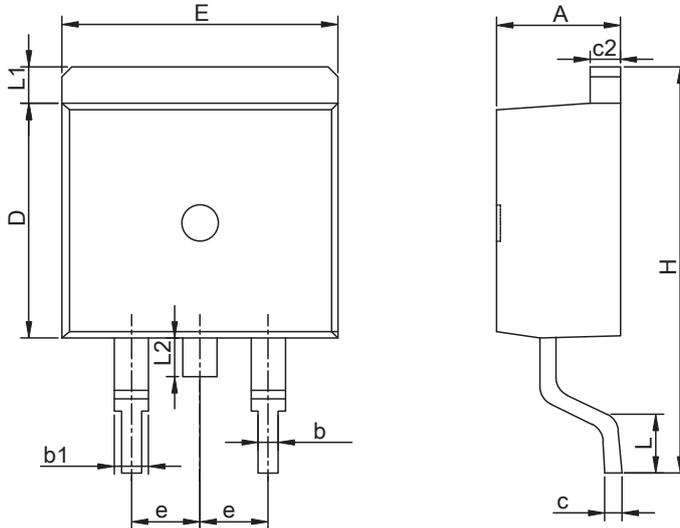


**Figure 9. Power Dissipation vs.  $T_C$**



**Figure 10. Safe Operation Area**

## Package Outline Dimensions TO-263 (D<sup>2</sup>PAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.90	0.169	0.193
b	0.70	0.95	0.028	0.037
b1	1.07	1.50	0.042	0.059
c	0.28	0.60	0.011	0.024
c2	1.17	1.37	0.046	0.054
D	8.40	9.35	0.331	0.368
E	9.80	10.45	0.386	0.411
e	2.54 BSC		0.100 BSC	
H	14.70	16.30	0.579	0.642
L	2.00	3.80	0.079	0.150
L1	0.97	1.42	0.038	0.056
L2	-	1.75	-	0.069

## Order Information

Device	Package	Marking	Packaging	SPQ
GSFT24020AU	TO-263 (D <sup>2</sup> PAK)	T24020	Tape & Reel	800 Pcs / Reel