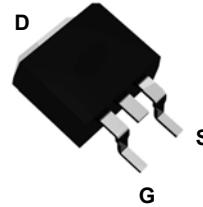
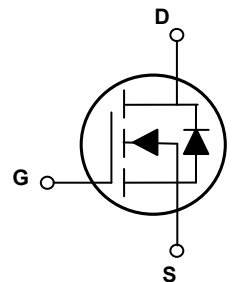


Main Product Characteristics

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



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 GSFT24020 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 ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous, at Steady-State ($T_C=25^{\circ}\text{C}$)	I_D	72	A
Drain Current-Continuous, at Steady-State ($T_C=100^{\circ}\text{C}$)		45	
Drain Current-Pulsed ($T_C=25^{\circ}\text{C}$) ¹	I_{DM}	288	A
Single Pulse Avalanche Energy	E_{AS}	140	mJ
Single Pulse Avalanche Current	I_{AS}	53	A
Power Dissipation ($T_C=25^{\circ}\text{C}$) ²	P_D	240	W
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	60	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.63	$^{\circ}\text{C/W}$
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 ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	200	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =200V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =200V, V _{GS} =0V, T _J =125°C	-	10	-	
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =20V	-	-	100	nA
		V _{DS} =0V, V _{GS} =-20V	-	-	-100	
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =46A	-	19.4	24	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	3.0	-	5.0	V
Gate Resistance	R _G	F=1MHz	-	4.4	-	Ω
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q _g	V _{DD} =100V, I _D =46A, V _{GS} =10V	-	36	-	nC
Gate-Source Charge ^{3,4}	Q _{gs}		-	22	-	
Gate-Drain ("Miller") Charge ^{3,4}	Q _{gd}		-	4.3	-	
Gate Plateau ^{3,4}	V _{plateau}		-	6.9	-	V
Turn-On Delay Time ^{3,4}	t _{d(on)}	V _{DD} =100V, R _G =2.5Ω V _{GS} =10V, I _D =46A	-	22	-	nS
Rise Time ^{3,4}	t _r		-	80	-	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	34	-	
Fall Time ^{3,4}	t _f		-	9.6	-	
Input Capacitance	C _{iSS}	V _{DS} =25V, V _{GS} =0V, F=1MHz	-	2655	-	pF
Output Capacitance	C _{oss}		-	1593	-	
Reverse Transfer Capacitance	C _{rSS}		-	37	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I _S	T _C =25°C, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	72	A
Diode Pulse Current	I _{S,Pulse}		-	-	288	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =46A	-	-	1.4	V
Reverse Recovery Time ³	t _{rr}	V _{GS} =0V, I _S =46A, diF/dt=100A/μs	-	128	-	nS
Reverse Recovery Charge ³	Q _{rr}		-	0.59	-	μC

Note:

1. Pulse time 5 μ S.
2. The dissipated power value will change with the temperature. When it is greater than 25 $^{\circ}\text{C}$, the dissipated power will decrease by 1.67W/ $^{\circ}\text{C}$ for every 1 degree of temperature rise.
3. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

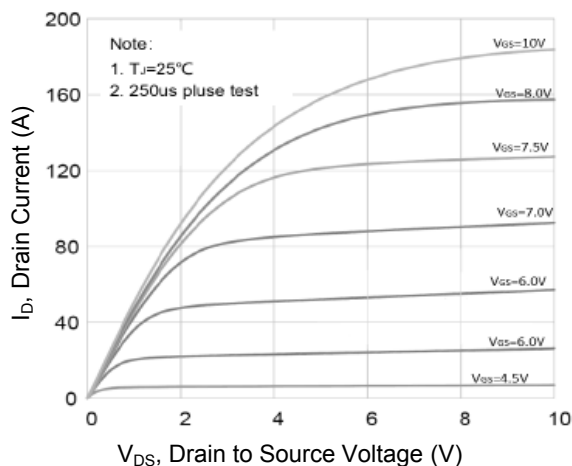


Figure 1. Typical Output Characteristics

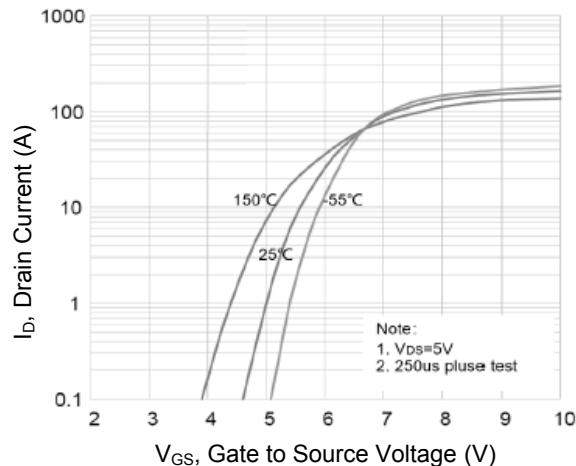


Figure 2. Transfer Characteristics

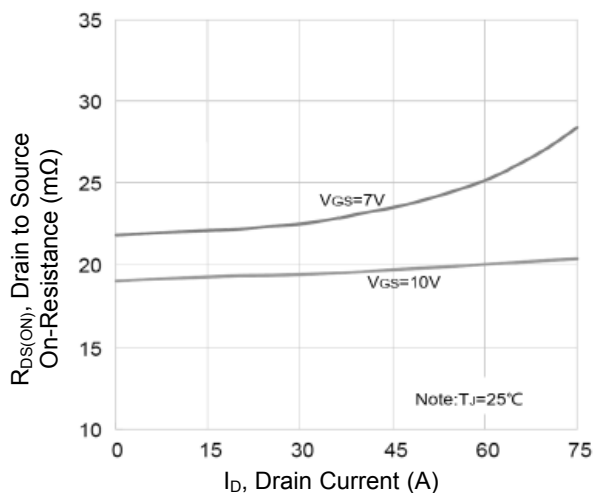


Figure 3. $R_{DS(ON)}$ vs. Drain Current

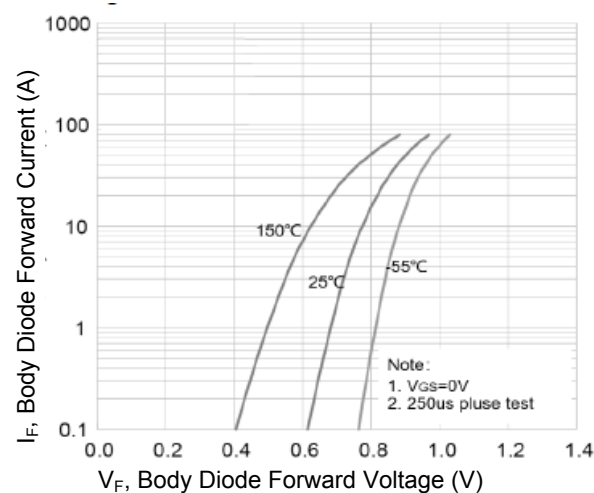


Figure 4. Body Diode Characteristics

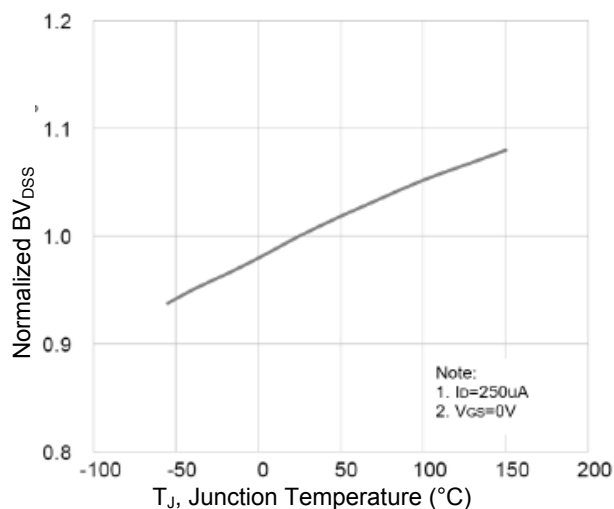


Figure 5. Normalized BV_{DS} vs. Junction Temperature

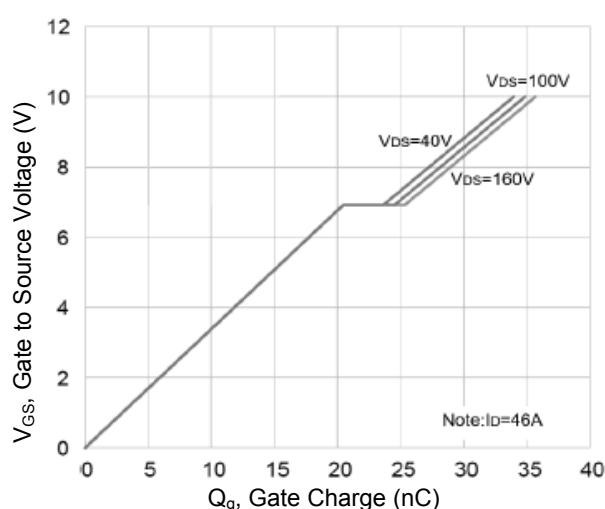


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristic Curves

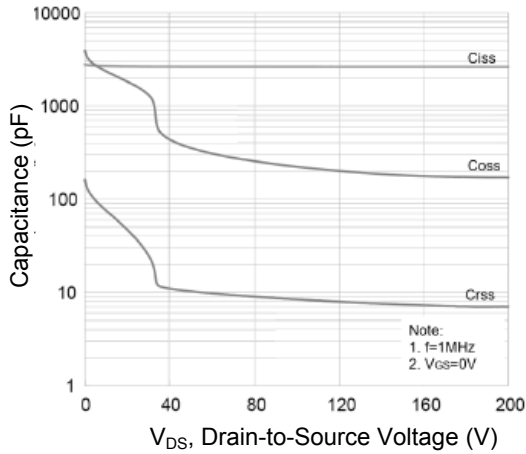


Figure 7. Capacitance Characteristics

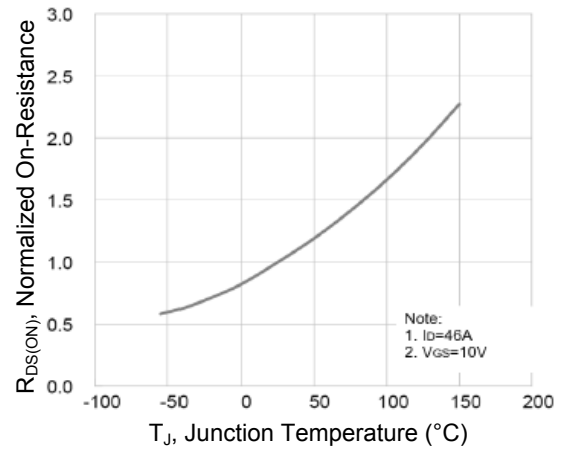


Figure 8. Normalized On-Resistance vs. Junction Temperature

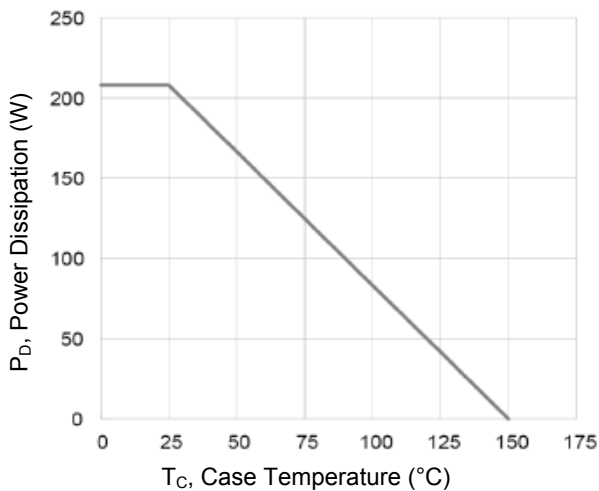


Figure 9. Power Dissipation vs. T_C

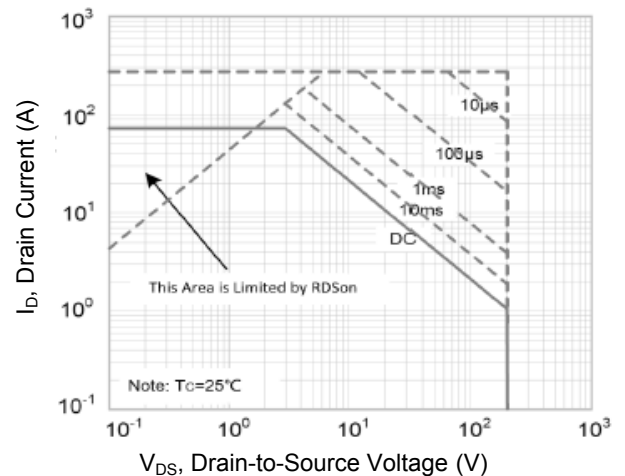
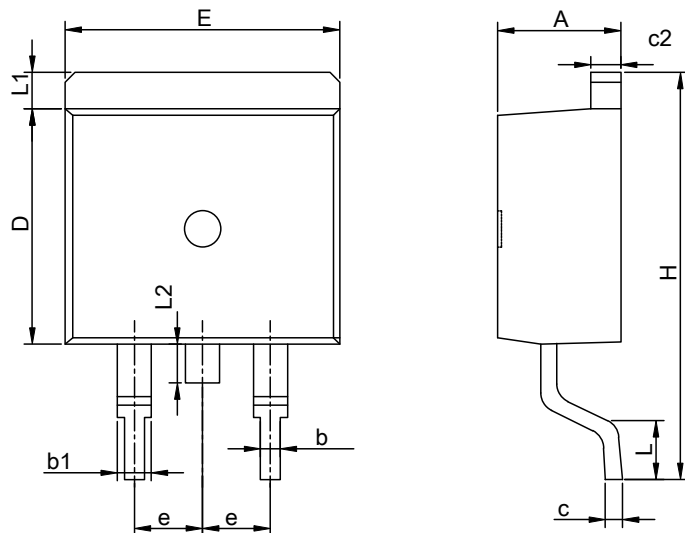


Figure 10. Safe Operation Area

Package Outline Dimensions TO-263 (D²PAK)



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	Carrier	Quantity
GSFT24020	TO-263 (D ² PAK)	T24020	Tape & Reel	800 Pcs / Reel