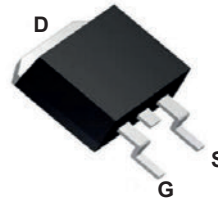
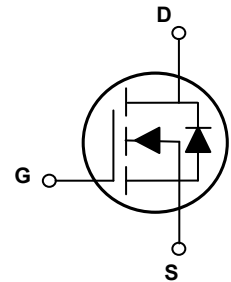


Main Product Characteristics

$V_{(BR)DSS}$	200V
$R_{DS(ON)}$	49mΩ (Max.)
I_D	24A



TO-263



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 GSFT49020 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_C=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 _C =25°C) ¹	I _D	24	A
Continuous Drain Current, @ Steady-State (T _C =100°C)		15	A
Pulsed Drain Current ²	I _{DM}	96	A
Power Dissipation (T _C =25°C)	P _D	150	W
Linear Derating Factor (T _C =25°C)		1.2	W/°C
Single Pulse Avalanche Energy ³	E _{AS}	29	mJ
Thermal Resistance, Junction-to-Case	R _{θJC}	0.83	°C/W
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	R _{θJA}	62.5	°C/W
Operating Junction and Storage Temperature Range	T _J /T _{STG}	-55 to +150	°C

Electrical Characteristics (T_C=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	200	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =200V, V _{GS} =0V	-	-	1	μA
		T _J =125°C	-	-	20	
Gate-to-Source Forward Leakage	I _{GSS}	V _{GS} =20V	-	-	100	nA
		V _{GS} =-20V	-	-	-100	
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =22A	-	41.6	49	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.1	3	3.9	V
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =100V F=1MHz	-	1223	-	pF
Output Capacitance	C _{oss}		-	94	-	
Reverse Transfer Capacitance	C _{rss}		-	6.8	-	
Total Gate Charge	Q _g	I _D =12A, V _{DS} =100V, V _{GS} =10V	-	20.5	-	nC
Gate-to-Source Charge	Q _{gs}		-	8.6	-	
Gate-to-Drain ("Miller") Charge	Q _{gd}		-	4.8	-	
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =100V, I _D =12A, R _{GEN} =6Ω	-	11.5	-	nS
Rise Time	t _r		-	26.3	-	
Turn-Off Delay Time	t _{d(off)}		-	34.5	-	
Fall Time	t _f		-	22.6	-	
Gate Resistance	R _g	F=1MHz	-	1.8	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	24	A
Pulsed Source Current (Body Diode)	I _{SM}		-	-	96	A
Diode Forward Voltage	V _{SD}	I _S =24A, V _{GS} =0V	-	1	1.2	V
Reverse Recovery Time	T _{rr}	T _J =25°C, I _F =24A, di/dt=100A/μs	-	83	-	ns
Reverse Recovery Charge	Q _{rr}		-	0.3	-	uc

Note:

1. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. L=0.1mH, V_{DD}=80V, I_{AS}=24A, T_J=25°C.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

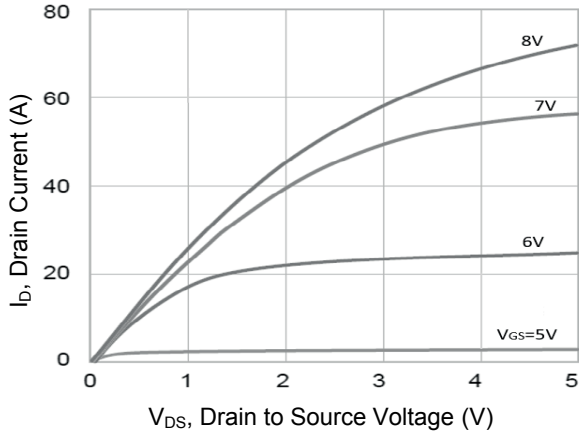


Figure 1. Output Characteristics

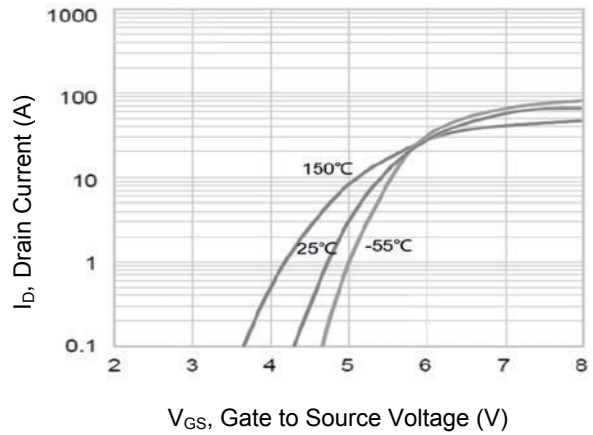


Figure 2. Transfer Characteristics

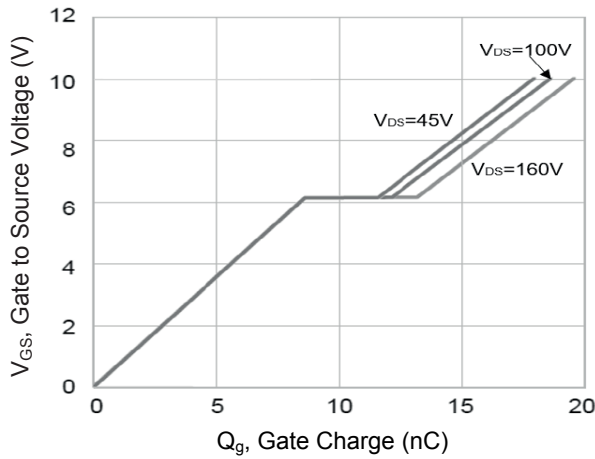


Figure 3. Gate Charge

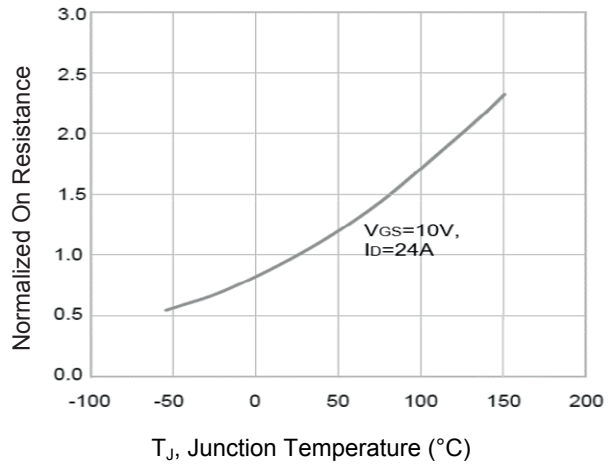


Figure 4. Normalized R_{DSON} vs. Junction Temperature

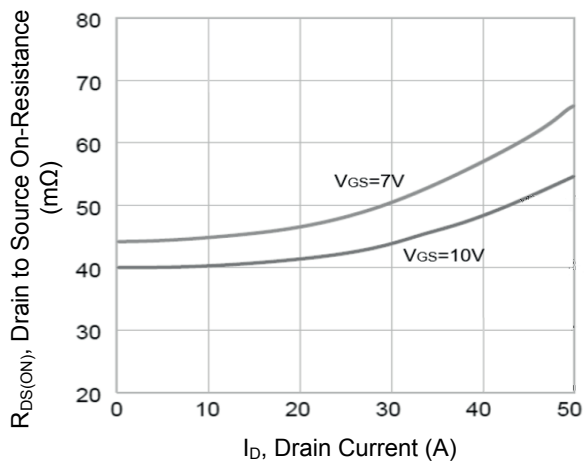


Figure 5. On-Resistance vs. Drain Current

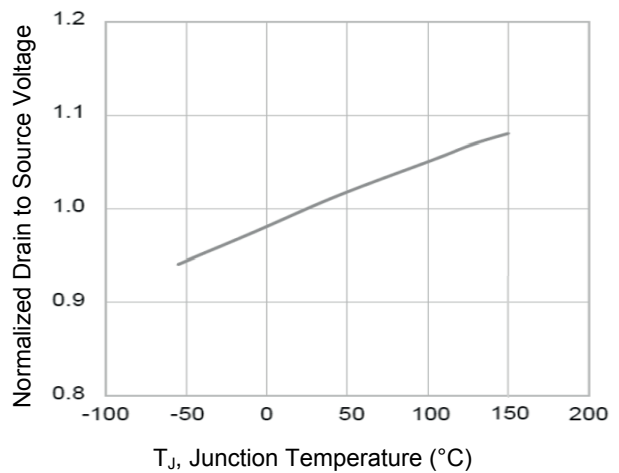


Figure 6. Normalized BV_{DSS} vs. Junction Temperature

Typical Electrical and Thermal Characteristic Curves

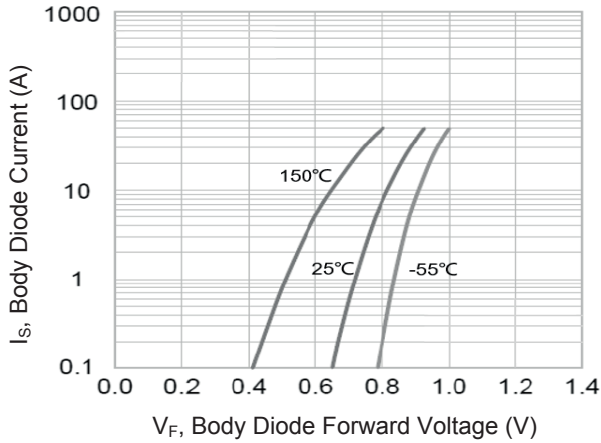


Figure 7. Body Diode Characteristics

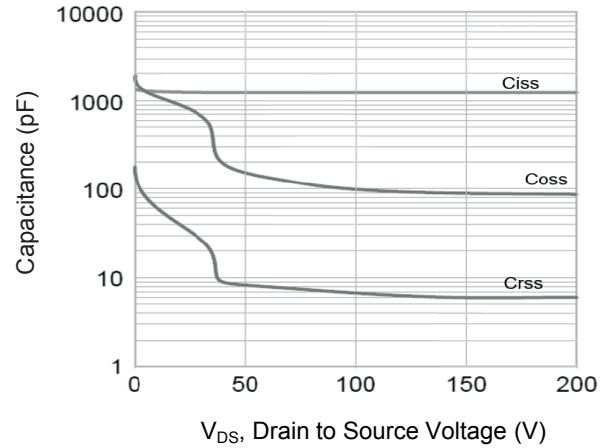


Figure 8. Transfer Characteristics

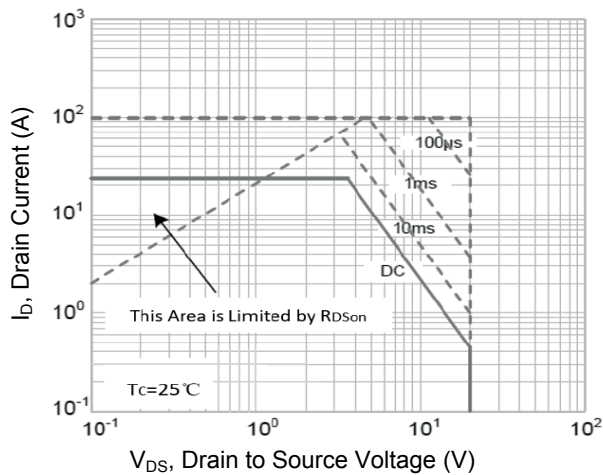
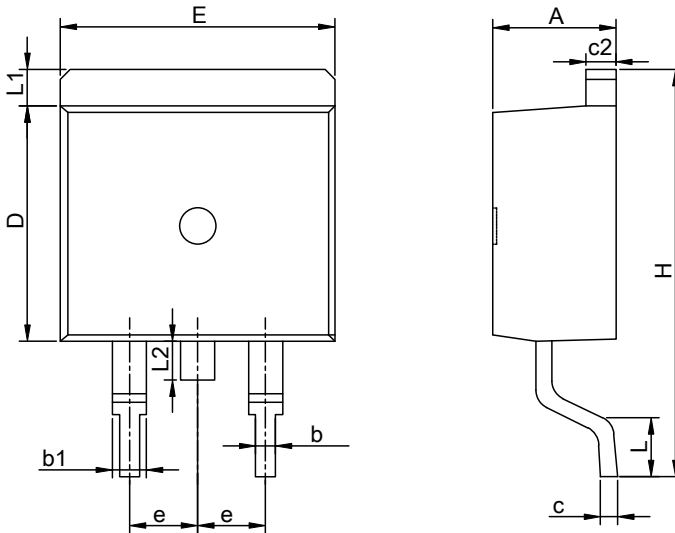


Figure 9. Safe Operation Area

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
GSFT49020	TO-263	T49020	Tape & Reel	800 Pcs / Reel