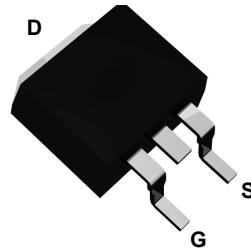
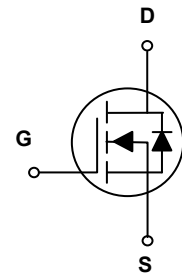


Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	24m Ω (Max.)
I_D	49A



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 GSFT24010 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 ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$) ¹	I_D	49	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		36	A
Pulsed Drain Current ²	I_{DM}	195	A
Power Dissipation @ $T_C=25^\circ\text{C}$	P_D	170	W
Linear Derating Factor @ $T_C=25^\circ\text{C}$		1.13	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	81	mJ
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.88	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	$^\circ\text{C}$

Electrical Characteristics ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
		$T_J=125^{\circ}\text{C}$	-	-	20	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=33A$	-	18	24	m Ω
		$V_{GS}=6V, I_D=10A$	-	21	34	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.1	3.0	3.8	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=50V, f=1\text{MHz}$	-	1355	-	pF
Output Capacitance	C_{oss}		-	171	-	
Reverse Transfer Capacitance	C_{rss}		-	4	-	
Total Gate Charge	Q_g	$I_D=33A, V_{DS}=50V, V_{GS}=10V$	-	23	-	nC
Gate-to-Source Charge	Q_{gs}		-	10	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	4.9	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=50V, I_D=33A, R_{GEN}=2\Omega$	-	8.4	-	nS
Rise Time	t_r		-	28.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	22.4	-	
Fall Time	t_f		-	7.8	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	2.2	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	49	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	195	A
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	-	1.0	1.2	V
Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}\text{C}, I_F=45A, di/dt=100A/\mu s$	-	56	-	nS
Reverse Recovery Charge	Q_{rr}		-	0.09	-	μC

Note:

1. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. $L=0.5\text{mH}, V_{DD}=80V, I_{AS}=18A, R_G=25\Omega, T_J=25^{\circ}\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

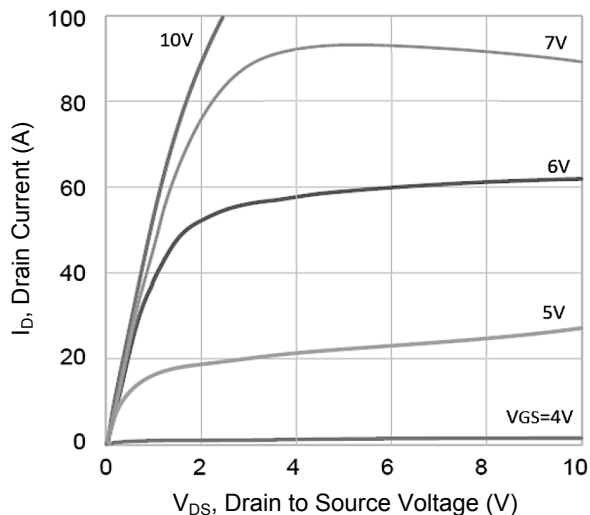


Figure 1. Output Characteristics

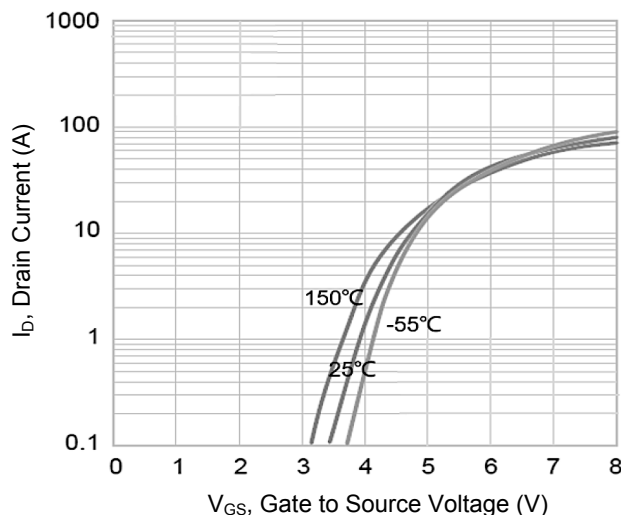


Figure 2. Transfer Characteristics

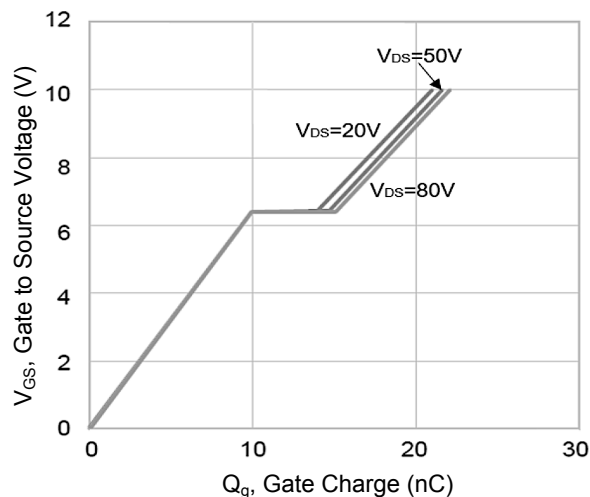


Figure 3. Gate Charge

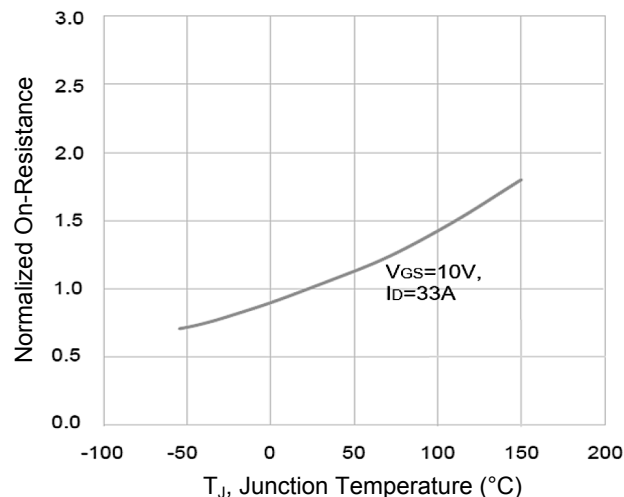


Figure 4. Normalized $R_{DS(ON)}$ vs. T_J

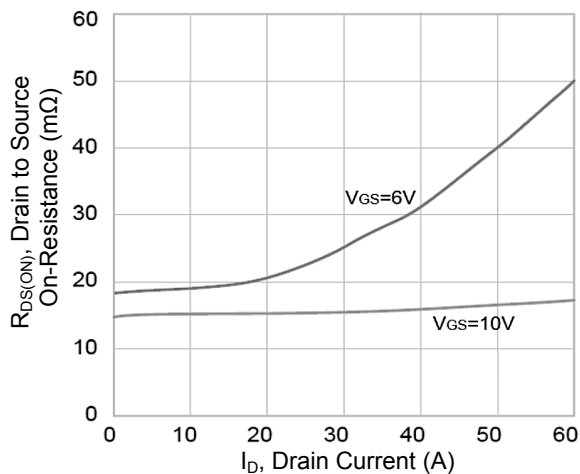


Figure 5. $R_{DS(ON)}$ vs. Drain Current

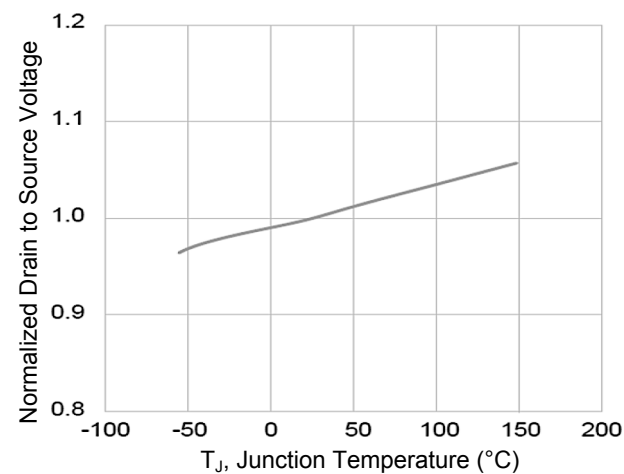


Figure 6. Normalized BV_{DSS} vs. T_J

Typical Electrical and Thermal Characteristic Curves

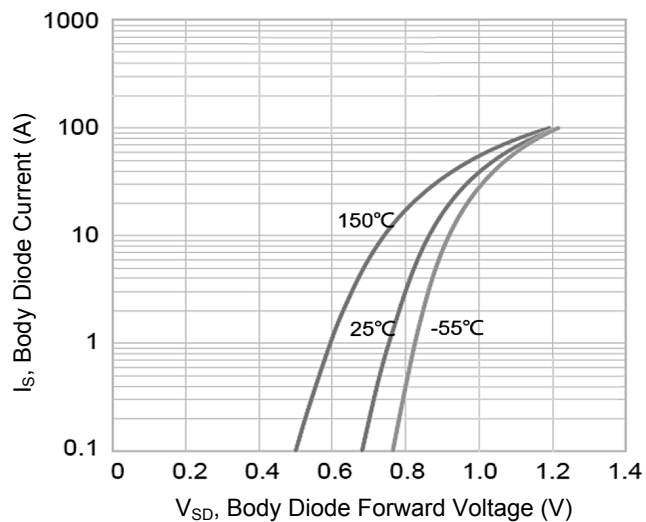


Figure 7. Body Diode Characteristics

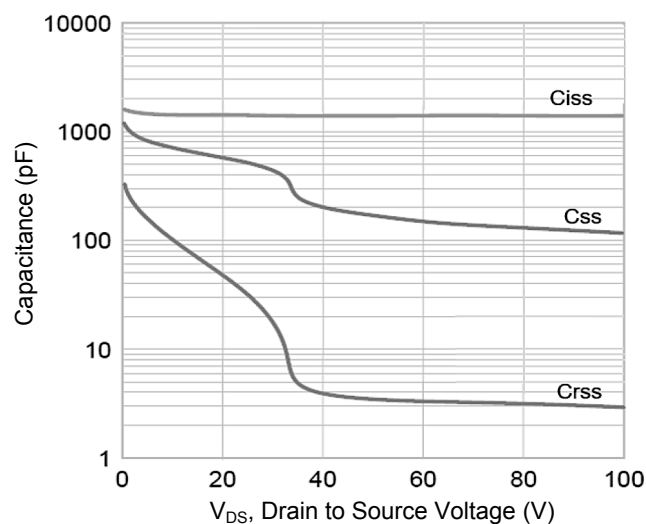


Figure 8. Capacitance Characteristics

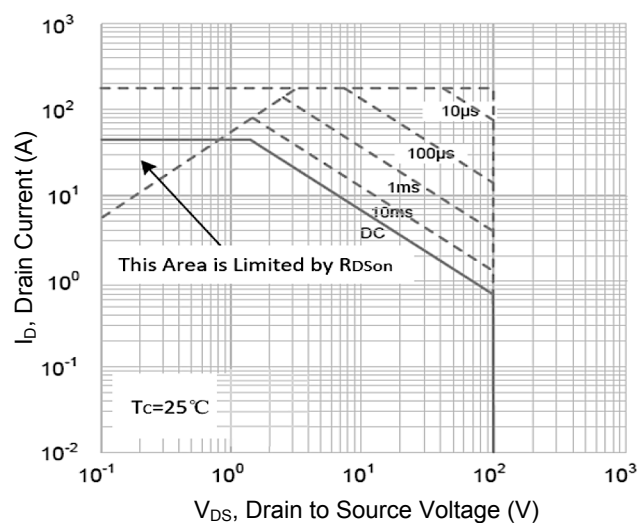
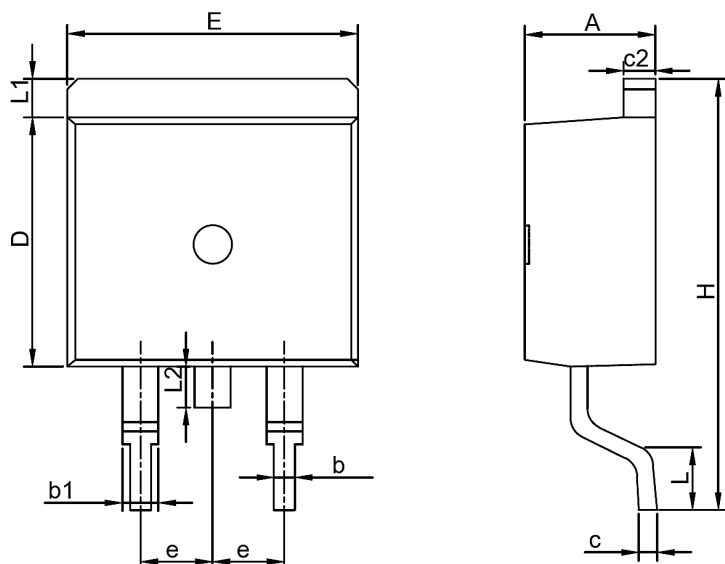


Figure 9. Safe Operation Area

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
GSFT24010	TO-263 (D ² PAK)	T24010	Tape & Reel	800 Pcs / Reel