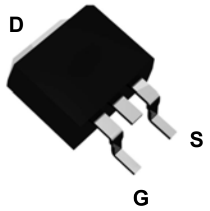
GOOD-ARK
SEMICONDUCTOR

GSFT3R110

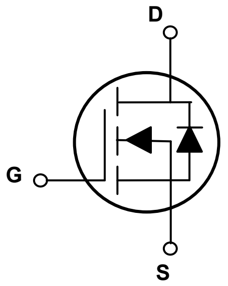
100V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	3.1mΩ (Max.)
I_D	180A



TO-263 (D^{2}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

Description

The GSFT3R110 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}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous, at Steady-State (T_C=25°C)[1]	I_D	180	A
Drain Current-Continuous, at Steady-State (T_C=100°C)		128	
Drain Current-Pulsed[2]	I_{DM}	720	A
Single Pulse Avalanche Energy[3]	E_{AS}	961	mJ
Power Dissipation (T_C=25°C)	P_D	224	W
Linear Derating Factor (T_C=25°C)		1.8	W/°C
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)[4]	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.56	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	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-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250uA	100	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V	-	-	1	μA
		T_J=125°C	-	-	20	
Gate-Source Forward Leakage	I_{GSS}	V_{GS}=20V	-	-	100	nA
		V_{GS}=-20V	-	-	-100	
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=90A	-	2.4	3.1	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250uA	2.1	3	3.9	V
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}=50V, I_D=90A, V_{GS}=10V	-	165	-	nC
Gate-Source Charge	Q_{gs}		-	61	-	
Gate-Drain ("Miller") Charge	Q_{gd}		-	40	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=50V, R_{GEN}=3Ω, V_{GS}=10V, I_D=90A	-	33	-	nS
Rise Time	t_r		-	46	-	
Turn-Off Delay Time	$t_{d(off)}$		-	119	-	
Fall Time	t_f		-	44	-	
Input Capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V, F=1MHz	-	10430	-	pF
Output Capacitance	C_{oss}		-	1263	-	
Reverse Transfer Capacitance	C_{rss}		-	35	-	
Gate Resistance	R_g	F=1MHz	-	2.2	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	180	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	720	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=90A	-	1	1.2	V
Reverse Recovery Time	t_{rr}	T_J=25°C, I_F=90A, di/dt=100A/μs	-	85	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.26	-	uc

Note:

1. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
2. Repetitive rating: Pulsed width limited by maximum junction temperature.
3. L=0.5mH, V_{DD}=80V, I_{AS}=62A, 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

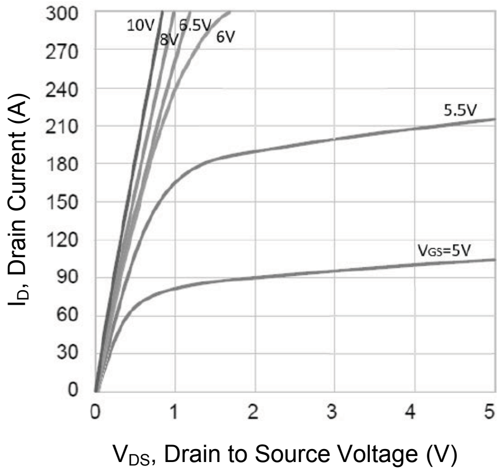


Figure 1. Typical Output Characteristics

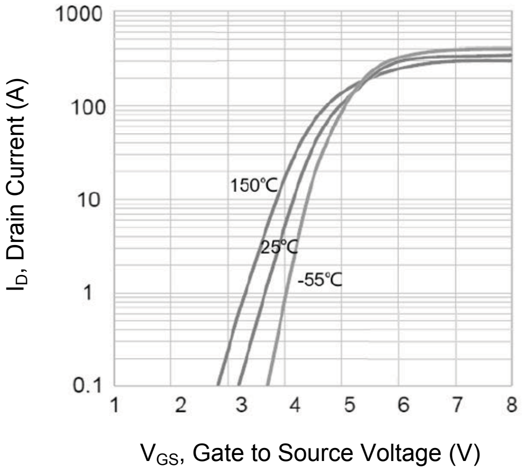


Figure 2. Typical Transfer Characteristics

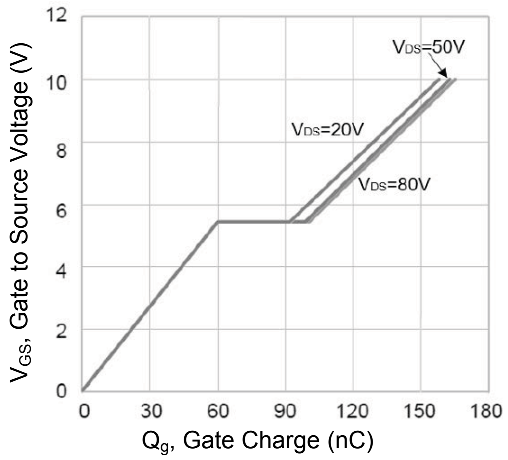


Figure 3. Gate Charge Characteristics

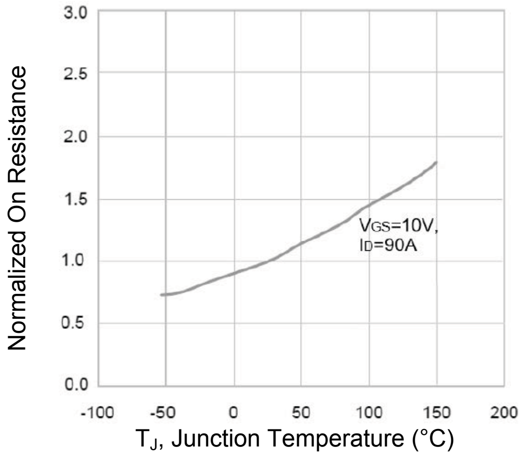


Figure 4. Normalized On-Resistance vs. Junction Temperature

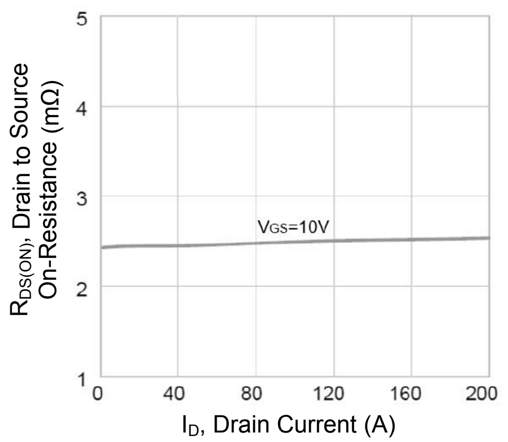


Figure 5. On Resistance vs. Drain Current

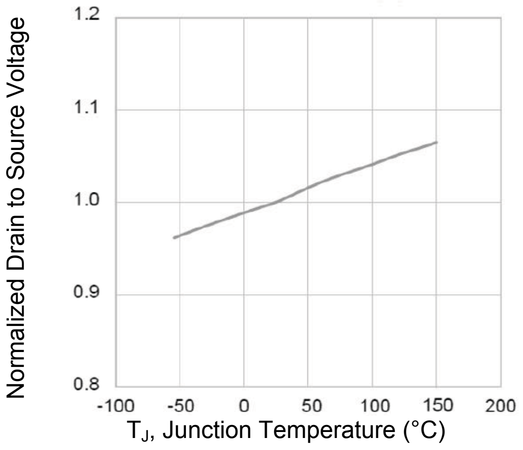


Figure 6. Normalized BV_{DSS} vs. Junction Temperature

Typical Electrical and Thermal Characteristic Curves

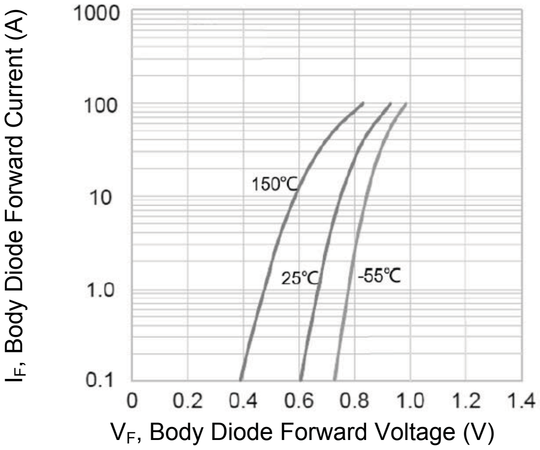


Figure 7. Body Diode Characteristics

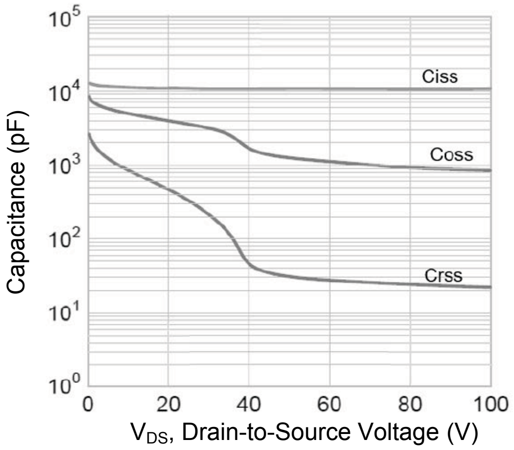


Figure 8. Transfer Characteristics

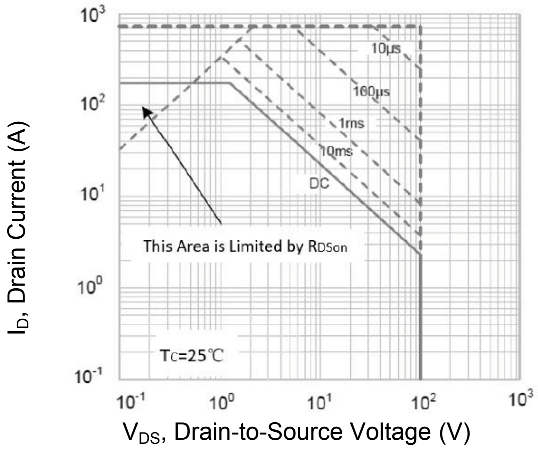
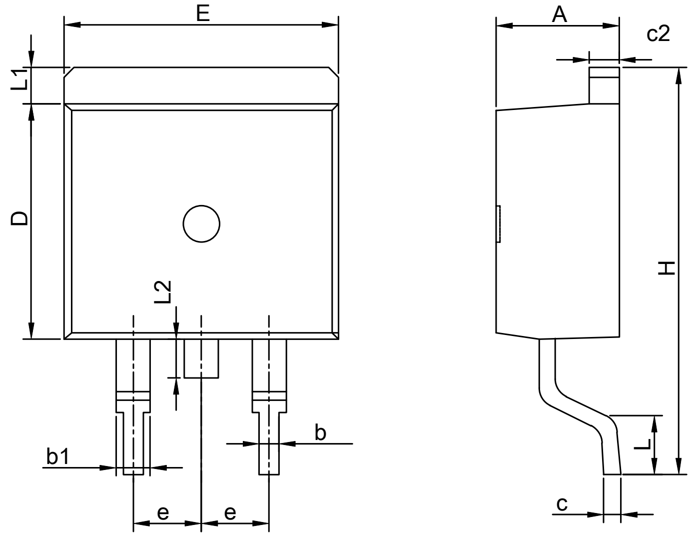


Figure 9. Safe Operation Area

Package Outline Dimensions TO-263 (D^2PAK)



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
GSFT3R110	TO-263 (D^2PAK)	T3R110	Tape & Reel	800 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com