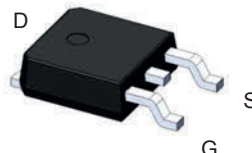
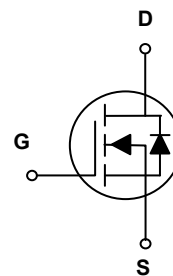


Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	23m Ω (Max.)
I_D	45A



TO-252



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 GSFD23010AU 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	45	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		32	A
Pulsed Drain Current ²	I_{DM}	180	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	84	W
Linear Derating Factor ($T_C=25^\circ\text{C}$)		0.56	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	81	mJ
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.79	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	62.0	$^\circ\text{C/W}$
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 =250μA	100	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =100V, 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	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.1	3.0	3.8	V
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	17	23	mΩ
		V _{GS} =6V, I _D =10A	-	19	34	
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V, f=1MHz	-	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} =2Ω	-	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=1MHz	-	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.	-	-	45	A
Pulsed Source Current (Body Diode)	I _{SM}		-	-	180	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°C, I _F =45A, di/dt=100A/μs	-	56	-	nS
Reverse Recovery Charge	Q _{rr}		-	0.09	-	uC

Notes:

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

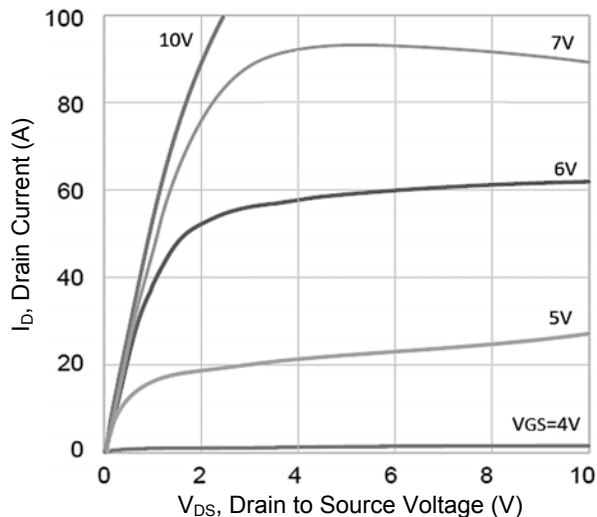


Figure 1. Output Characteristics

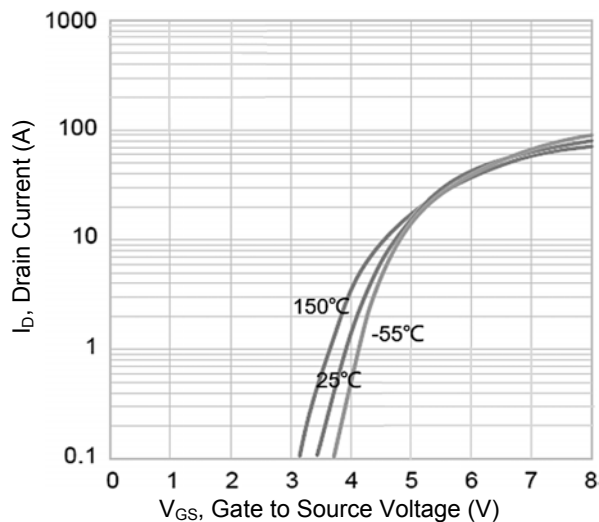


Figure 2. Transfer Characteristics

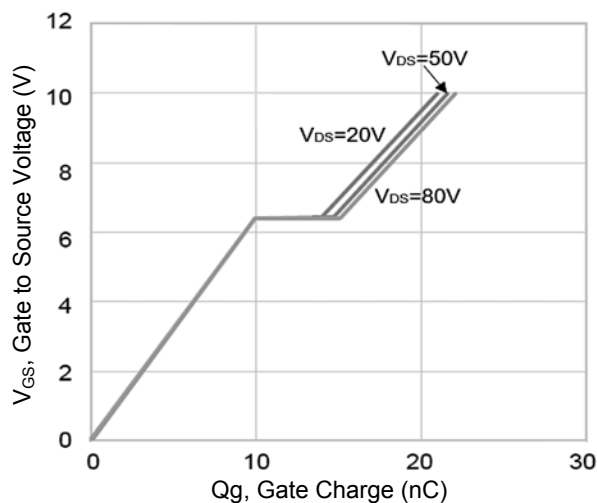


Figure 3. Gate Charge

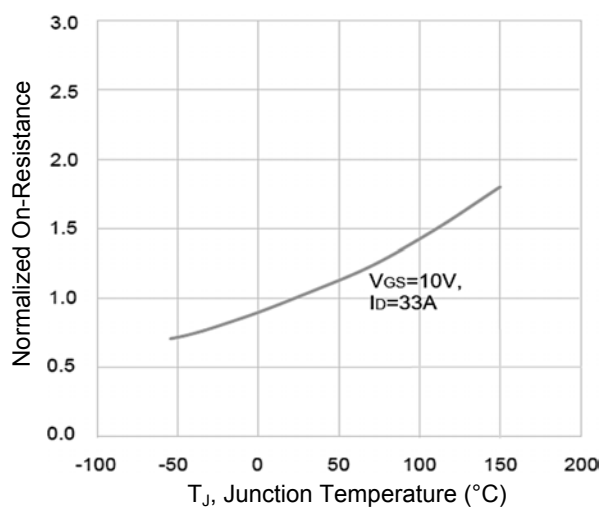


Figure 4. Normalized $R_{DS(ON)}$ vs. T_J

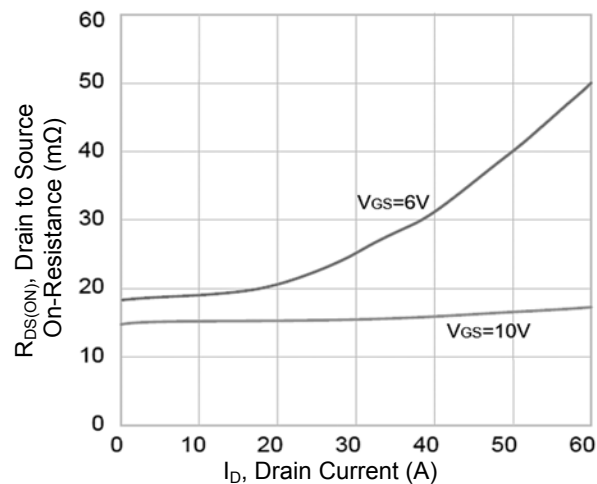


Figure 5. On-Resistance vs. Drain Current

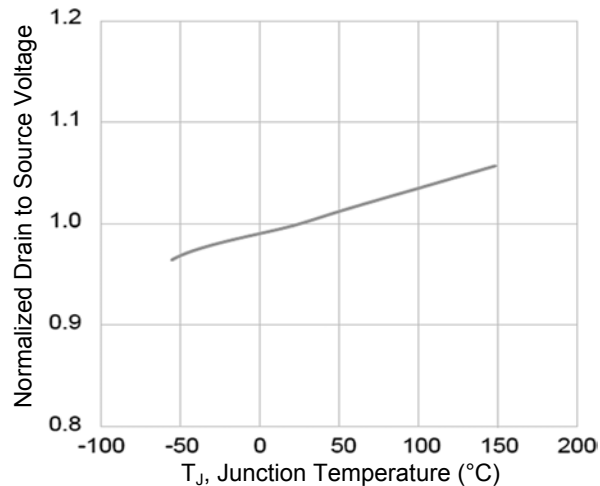


Figure 6. Normalized BV_{DS} vs. T_J

Typical Electrical and Thermal Characteristic Curves

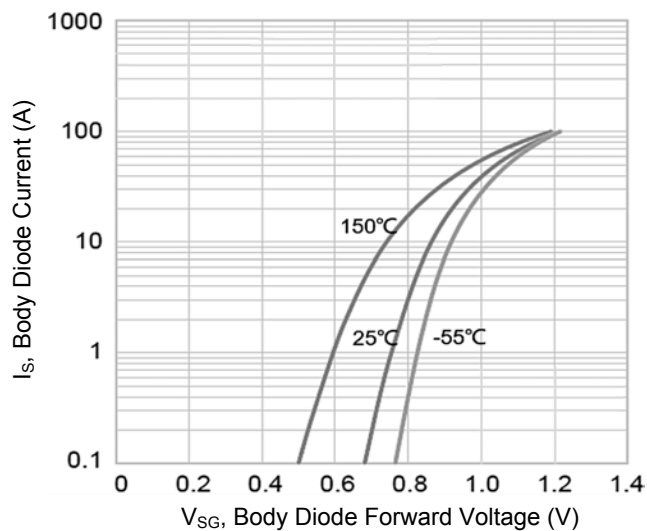


Figure 7. Body Diode Characteristics

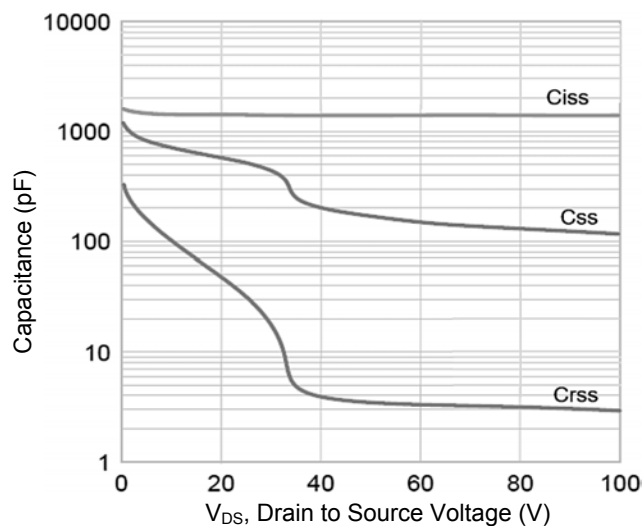


Figure 8. Capacitance Characteristics

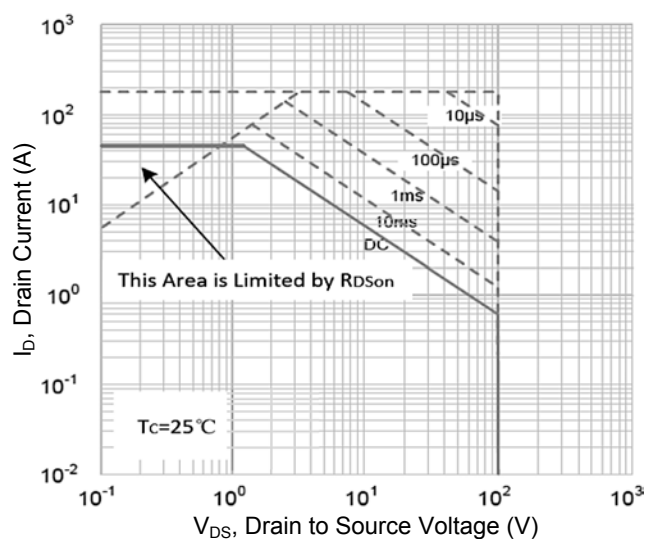
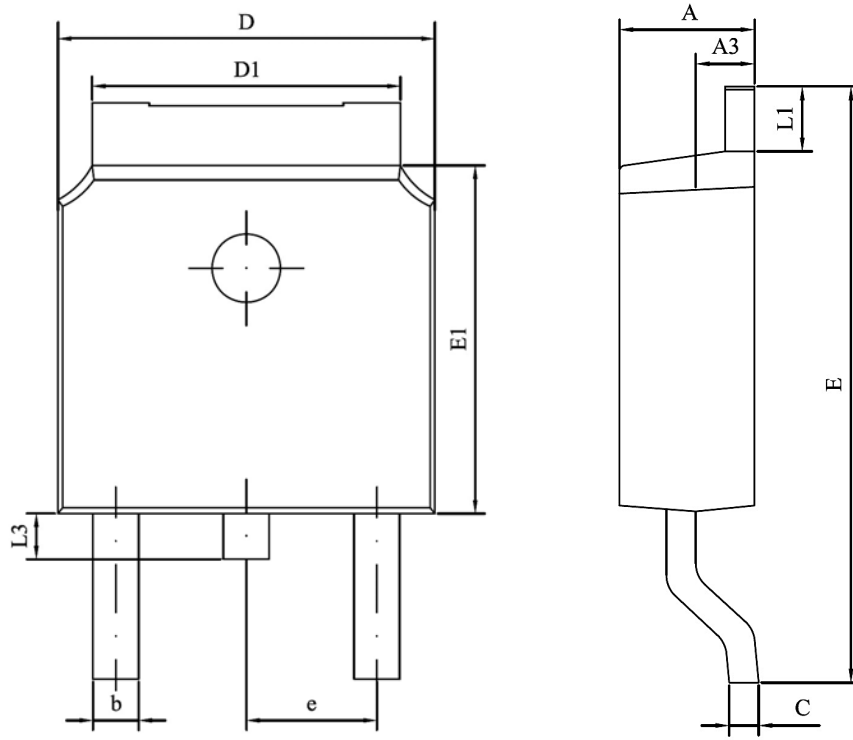


Figure 9. Safe Operation Area

Package Outline Dimensions (TO-252)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.150	2.400	0.085	0.094
A3	0.900	1.100	0.035	0.043
b	0.500	0.900	0.020	0.035
C	0.400	0.650	0.016	0.026
D	6.300	6.900	0.248	0.272
D1	4.950	5.500	0.195	0.217
E	9.400	10.410	0.370	0.410
E1	5.900	6.300	0.232	0.248
e	2.286 BSC		0.090 BSC	
L1	0.890	1.270	0.035	0.050
L3	0.600	1.100	0.024	0.043

Order Information

Device	Package	Marking	Carrier	Quantity
GSFD23010AU	TO-252	D23010	Tape & Reel	2,500 Pcs / Reel