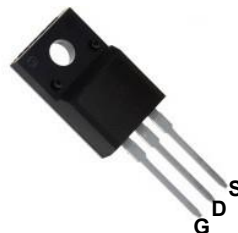
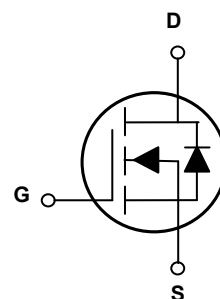


Main Product Characteristics

V_{DS}	650V
$R_{DS(ON)max}$	580mΩ
I_D	8A



TO-220F



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 GSJU6508 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 supply 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}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous ($T_C=25^{\circ}\text{C}$)	I_D	8	A
Drain Current-Continuous ($T_C=100^{\circ}\text{C}$)		5	
Drain Current-Pulsed ¹	I_{DM}	32	A
Single Pulse Avalanche Energy ²	E_{AS}	170	mJ
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	25	W
Power Dissipation-Derate above 25°C		0.2	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.85	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T_J	-55 To +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^{\circ}\text{C}$

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =1mA	650	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =520V, V _{GS} =0V, T _J =125°C	-	-	10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	-	-	±100	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =2A	-	530	580	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250μA	2	3	4	V
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =480V, V _{GS} =10V, I _D =4A	-	13	20	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	2	4	
Gate-Drain Charge ^{2,3}	Q _{gd}		-	5	8	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =480V, R _G =25Ω, V _{GS} =10V, I _D =4A	-	14	21	nS
Rise Time ^{2,3}	t _r		-	34	51	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	48	72	
Fall Time ^{2,3}	t _f		-	25	38	
Input Capacitance	C _{iss}	V _{DS} =100V, V _{GS} =0V, F=1MHz	-	450	675	pF
Output Capacitance	C _{oss}		-	24	36	
Reverse Transfer Capacitance	C _{rss}		-	1.2	4.2	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	27	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	8	A
Pulsed Source Current ²	I _{SM}		-	-	16	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =4A, T _J =25°C	-	-	1.4	V
Reverse Recovery Time	t _{rr}	V _R =400V, I _S =4A, di/dt=100A/μs, T _J =25°C	-	230	-	nS
Reverse Recovery Charge	Q _{rr}		-	2	-	nC

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

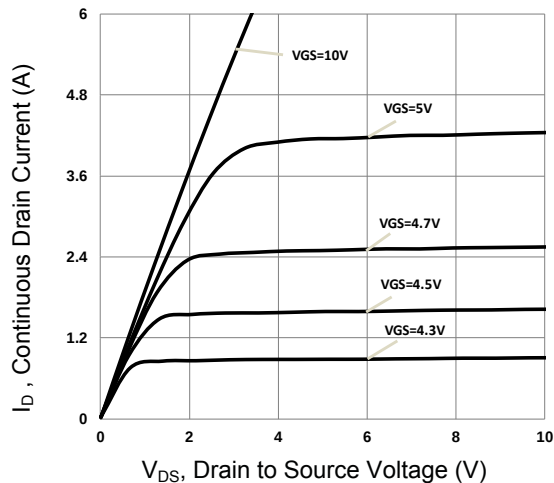


Figure 1. Typical Output Characteristics

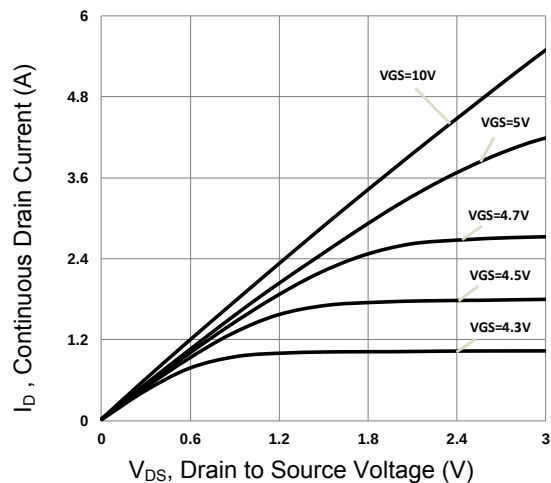


Figure 2. Typical Output Characteristics

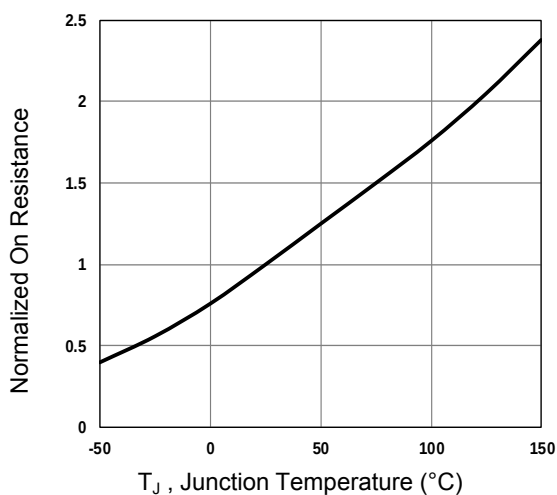


Figure 3. Normalized $R_{DS(on)}$ vs. T_J

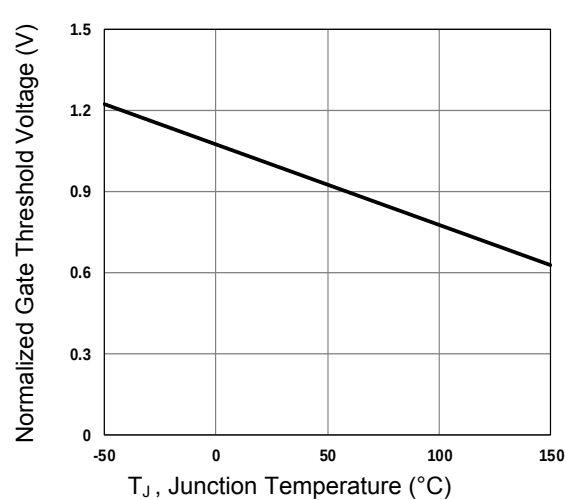


Figure 4. Normalized V_{th} vs. T_J

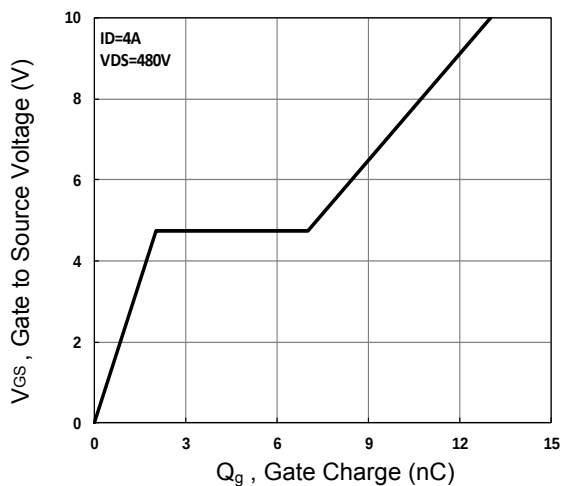


Figure 5. Gate Charge Characteristics

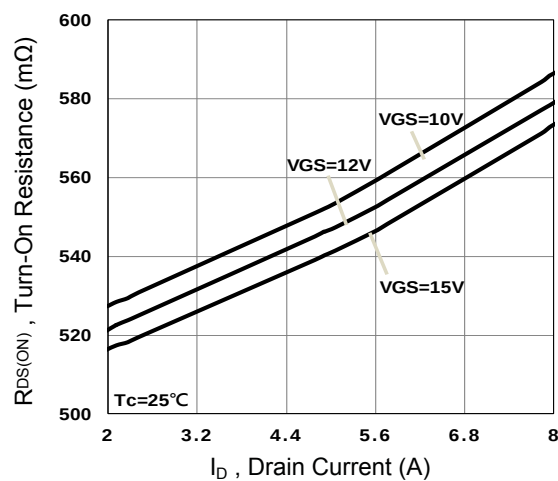


Figure 6. Turn-On Resistance vs. I_D

Typical Electrical and Thermal Characteristic Curves

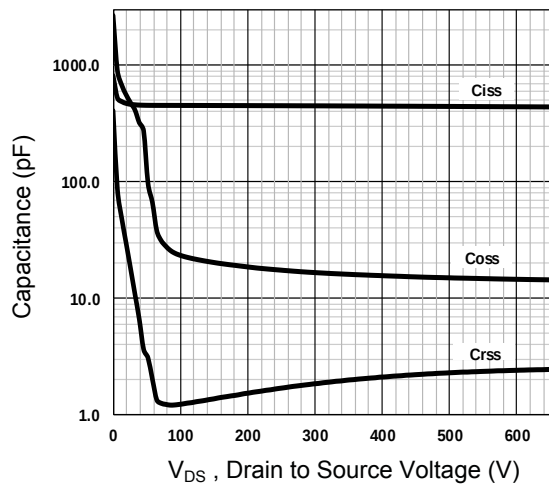


Figure 7. Capacitance Characteristics

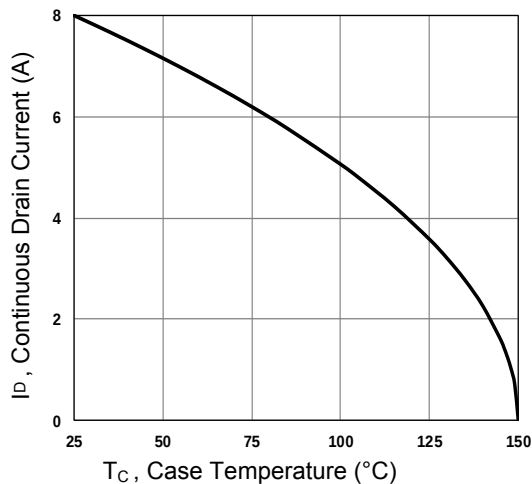


Figure 8. Continuous Drain Current vs. T_C

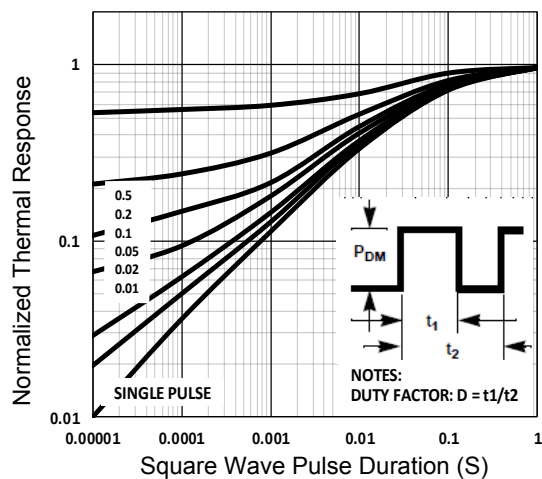


Figure 9. Normalized Transient Impedance

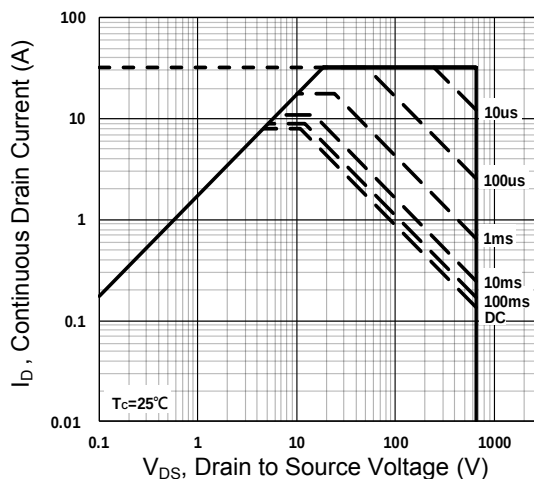


Figure 10. Maximum Safe Operation Area

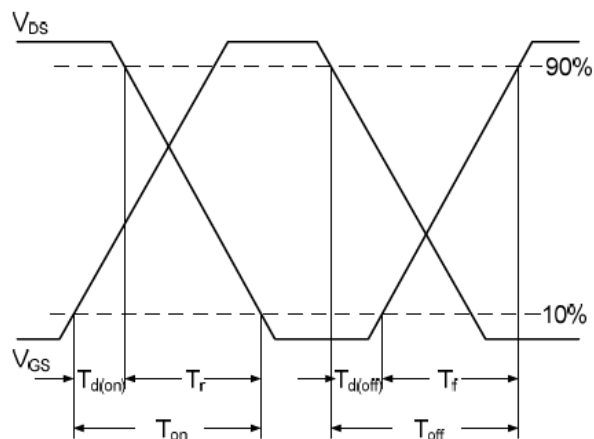


Figure 11. Switching Time Waveform

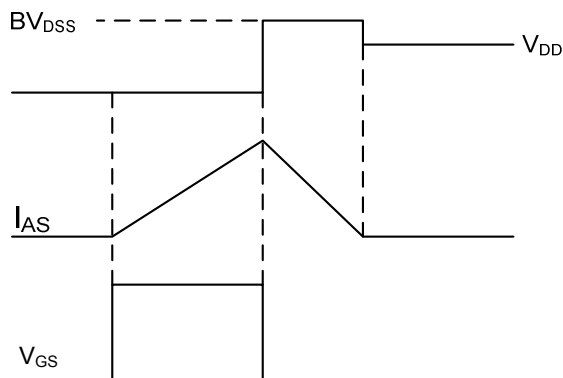
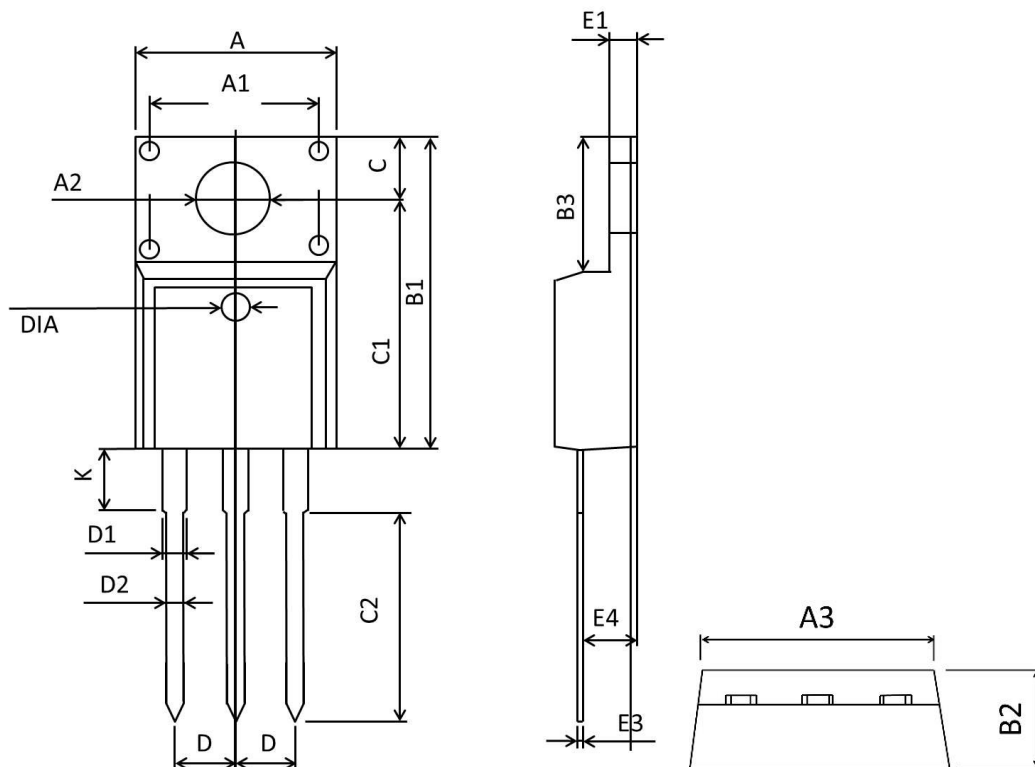


Figure 12. EAS Waveform

Package Outline Dimensions (TO-220F)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	9.860	10.460	0.389	0.411
A1	6.900	7.100	0.272	0.280
A2	3.100	3.500	0.122	0.138
B1	15.450	16.300	0.608	0.642
B2	4.400	5.000	0.173	0.197
B3	6.280	7.100	0.247	0.280
C	3.100	3.500	0.122	0.138
C1	12.270	12.870	0.483	0.507
C2	9.600	10.520	0.378	0.414
D	2.540BSC		0.1BSC	
D1	1.070	1.470	0.042	0.058
D2	0.600	1.000	0.024	0.039
K	2.800	3.500	0.110	0.138
E1	2.340	2.740	0.092	0.108
E3	0.350	0.650	0.014	0.026
E4	2.460	2.960	0.097	0.117
DIA	1.35	1.65	0.053	0.065