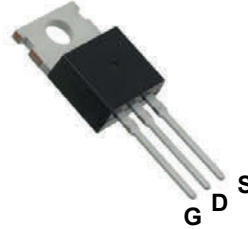
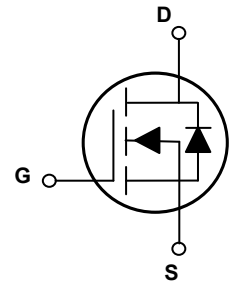


Main Product Characteristics

$V_{(BR)DSS}$	650V
$R_{DS(ON)}$	0.29Ω (max.)
I_D	15A



TO-220



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 GSJH65R290 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}	650	V
Gate-to-Source Voltage	V_{GS}	±30	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$)	I_D	15	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		9.0	A
Pulsed Drain Current	I_{DM}	60	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	120	W
		0.96	W/°C
Single Pulse Avalanche Energy ¹	E_{AS}	307	mJ
Body Diode Reverse Voltage Slope ²	dv/dt	15	V/ns
MOS dv/dt Ruggedness ³	dv/dt	50	V/ns
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.5	°C/W
Junction-to-Case	$R_{\theta JC}$	1.04	°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	650	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	-	-	200	nA
Gate-to-Source Forward Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =30V	-	-	100	nA
		V _{DS} =0V, V _{GS} =-30V	-	-	-100	
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =7A, T _J =25°C	-	0.25	0.29	Ω
		V _{GS} =10V, I _D =7A, T _J =125°C	-	0.52	-	Ω
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	-	4.0	V
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =100V, f=1MHz	-	918	-	pF
Output Capacitance	C _{oss}		-	42	-	
Reverse Transfer Capacitance	C _{rss}		-	1.1	-	
Total Gate Charge ^{4,5}	Q _g	I _D =14A, V _{DD} =520V, V _{GS} =10V	-	26	-	nC
Gate-to-Source Charge ^{4,5}	Q _{gs}		-	7.1	-	
Gate-to-Drain ("Miller") Charge ^{4,5}	Q _{gd}		-	12	-	
Turn-On Delay Time ^{4,5}	t _{d(on)}	V _{DD} =325V, V _{GS} =10V, R _G =25Ω, I _D =14A	-	19	-	nS
Rise Time ^{4,5}	t _r		-	43	-	
Turn-Off Delay Time ^{4,5}	t _{d(off)}		-	68	-	
Fall Time ^{4,5}	t _f		-	36	-	
Gate Resistance	R _g	f=1MHz	-	4.4	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	T _C =25°C, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	15	A
Source Pulse Current	I _{SM}		-	-	60	A
Diode Forward Voltage	V _{SD}	I _S =14A, V _{GS} =0V	-	-	1.3	V
Reverse Recovery Time ³	T _{rr}	I _F =14A, V _{DD} =50V, di/dt=100A/us	-	266	-	nS
Reverse Recovery Charge ³	Q _{rr}		-	3.4	-	μC
Reverse Recovery Current	I _{rrm}		-	26	-	A

Note:

- L=79mH, I_{AS}=2.6A, V_{DD}=100V, starting temperature T_J=25°C.
- V_{DS}=0-400V, I_{SD}≤20A, T_J=25°C.
- V_{DS}=0-480V.
- Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%.
- Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

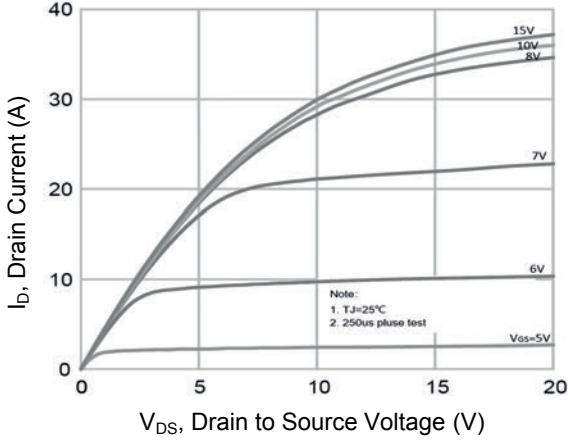


Figure 1. Typical Output Characteristics

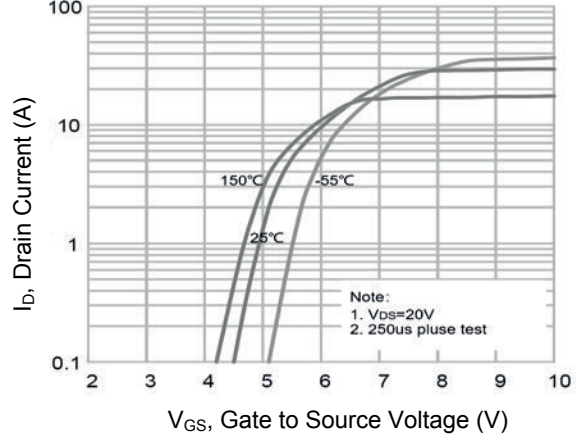


Figure 2. Transfer Characteristics

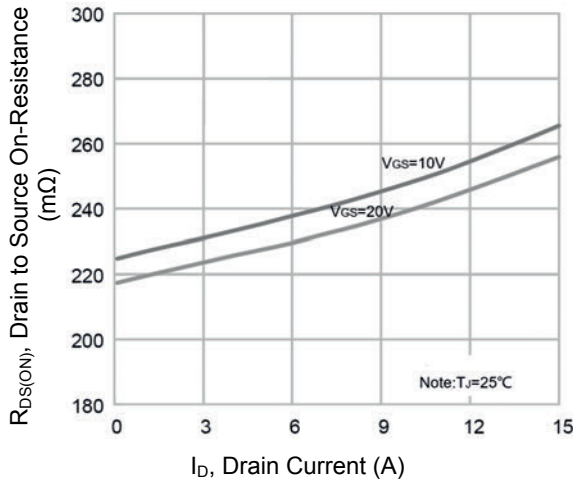


Figure 3. $R_{DS(ON)}$ vs. Drain Current

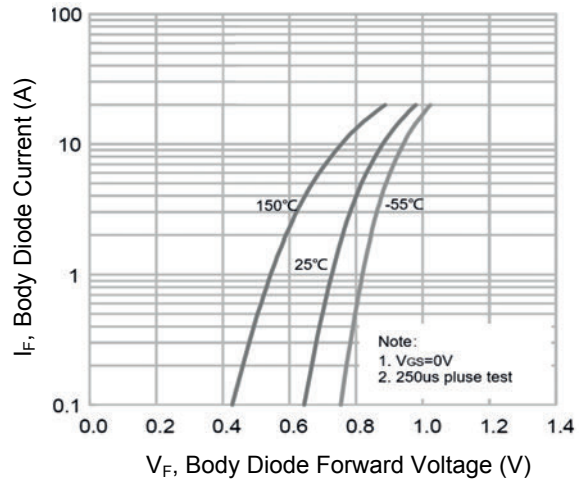


Figure 4. Body Diode Characteristics

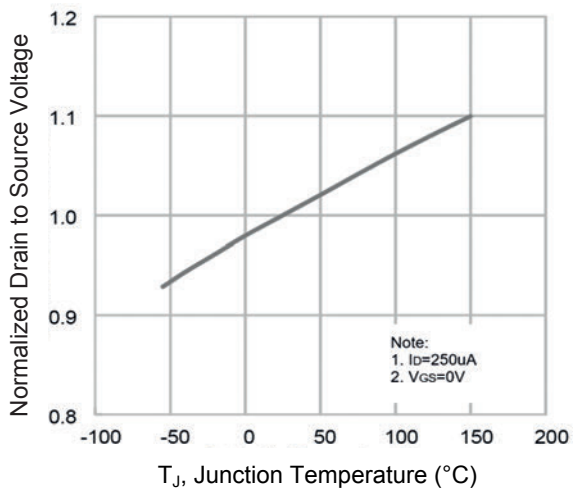


Figure 5. Normalized BV_{DSS} vs. T_J

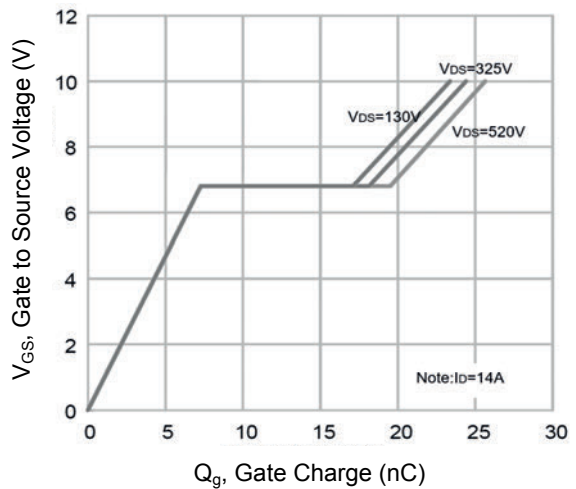


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

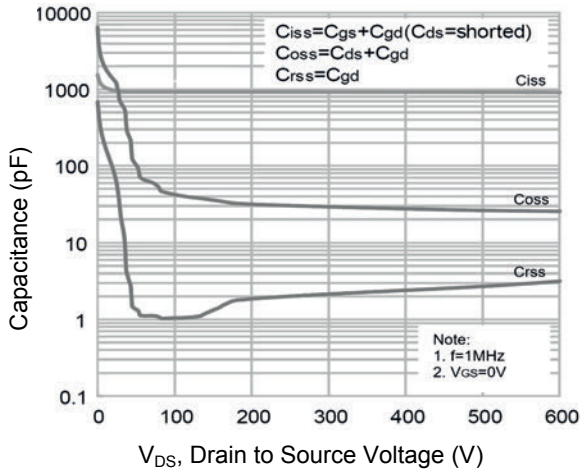


Figure 7. Capacitance Characteristics

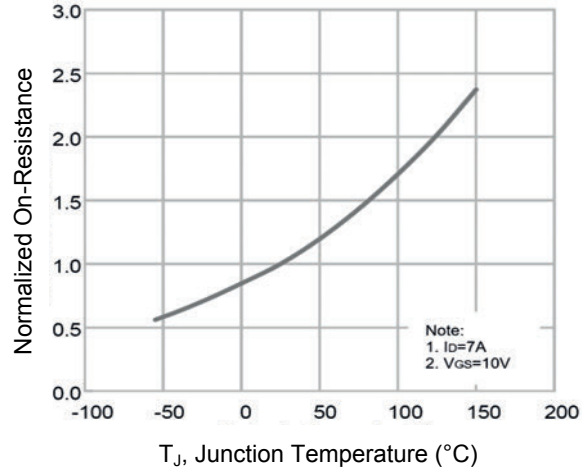


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

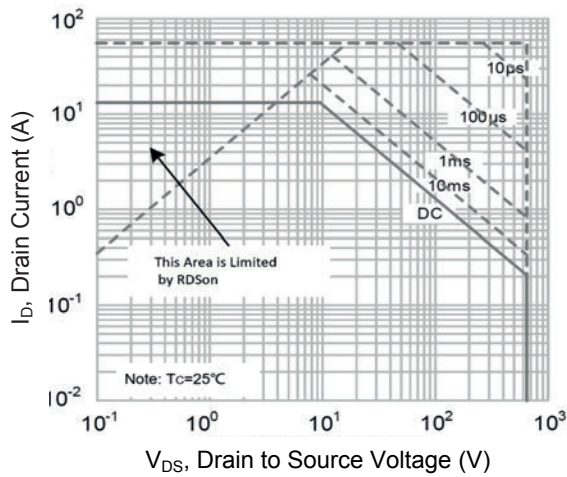
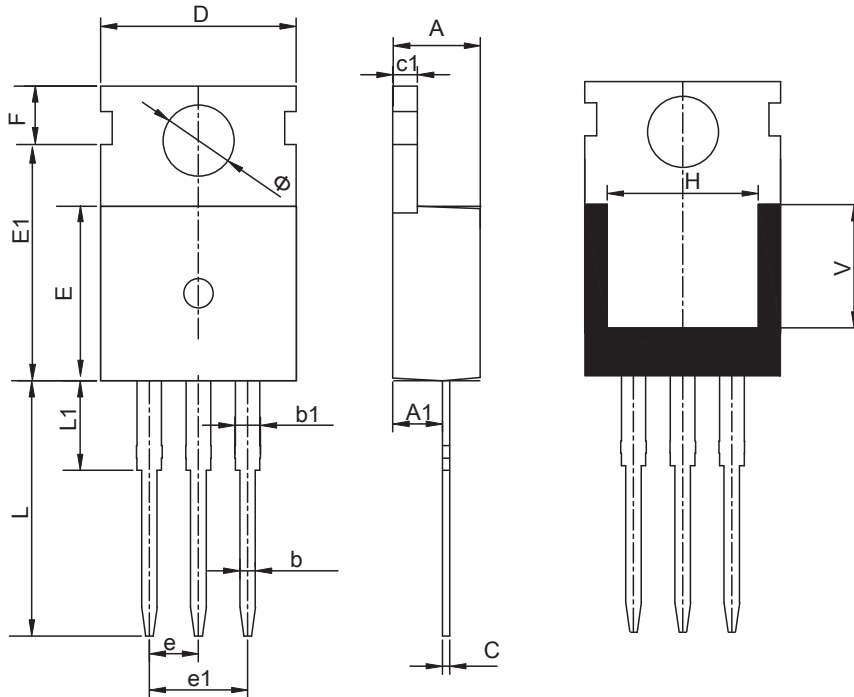


Figure 9. Safe Operation Area

Package Outline Dimensions (TO-220)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.25	2.70	0.089	0.106
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
C	0.33	0.65	0.013	0.026
c1	1.20	1.40	0.047	0.055
D	9.91	10.25	0.390	0.404
E	8.95	9.75	0.352	0.384
E1	12.65	13.00	0.498	0.512
e	2.54 TYP		0.100 TYP	
e1	4.98	5.18	0.196	0.204
F	2.65	2.95	0.104	0.116
H	7.90	8.10	0.311	0.319
L	12.90	13.40	0.508	0.528
L1	2.68	3.25	0.106	0.128
V	6.90 REF		0.272 REF	
Φ	3.40	3.80	0.134	0.150

Order Information

Device	Package	Marking	Carrier	Quantity
GSJH65R290	TO-220	H65R290	Tube	50pcs / Tube