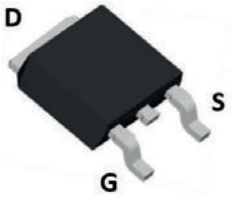
GOOD-ARK
SEMICONDUCTOR

GSJD65R290

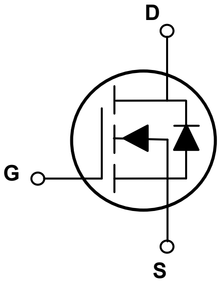
650V N-Channel MOSFET

Main Product Characteristics

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



TO-252 (DPAK)



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 GSJD65R290 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	Parameter	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-to-Source Voltage	V_{GS}	±30	V
Continuous Drain Current, @ Steady-State (T_C=25°C)	I_D	15	A
Continuous Drain Current, @ Steady-State (T_C=100°C)		9.0	A
Pulsed Drain Current	I_{DM}	60	A
Power Dissipation (T_C=25°C)	P_D	109	W
		0.88	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
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.15	°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	-	0.24	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_F/dt=100A/us	-	266	-	nS
Reverse Recovery Charge[3]	Q_{rr}		-	3.4	-	μC
Reverse Recovery Current	I_{rrm}		-	26	-	A

Notes:

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

Typical Electrical and Thermal Characteristic Curves

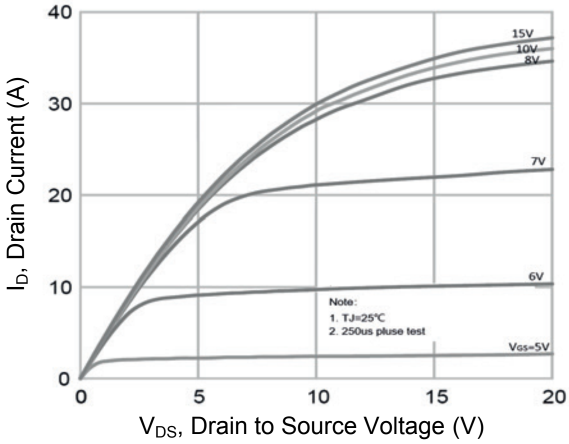


Figure 1. Typical Output Characteristics

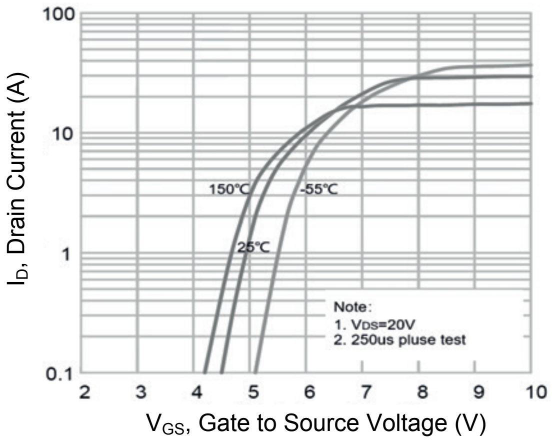


Figure 2. Transfer Characteristics

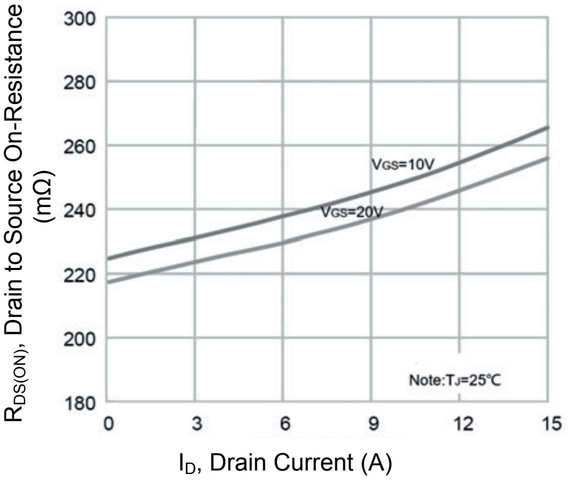


Figure 3. $R_{DS(ON)}$ vs. Drain Current

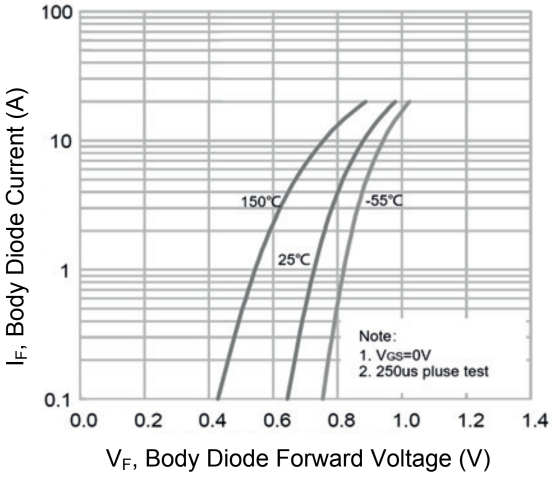


Figure 4. Body Diode Characteristics

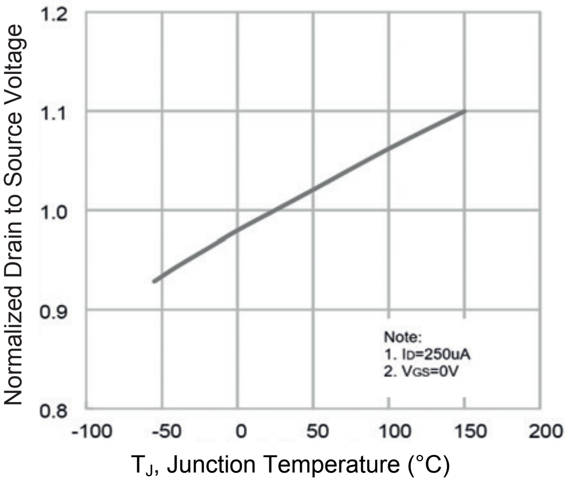


Figure 5. Normalized BV_{DSS} vs. T_J

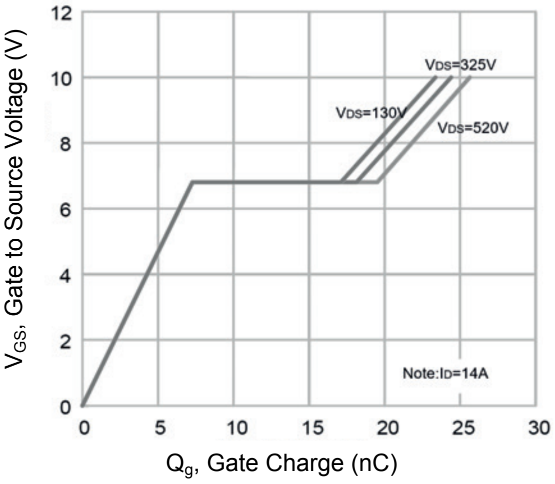


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

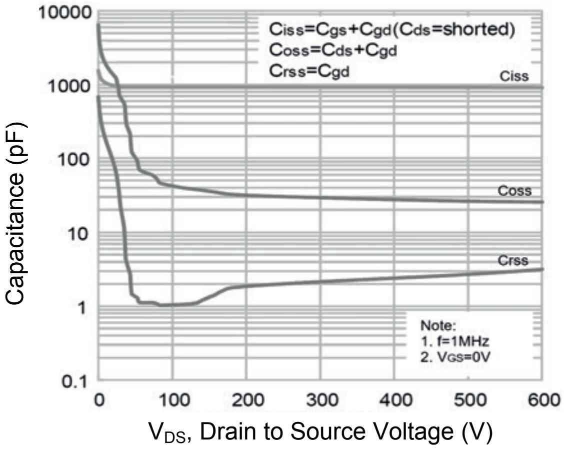


Figure 7. Capacitance Characteristics

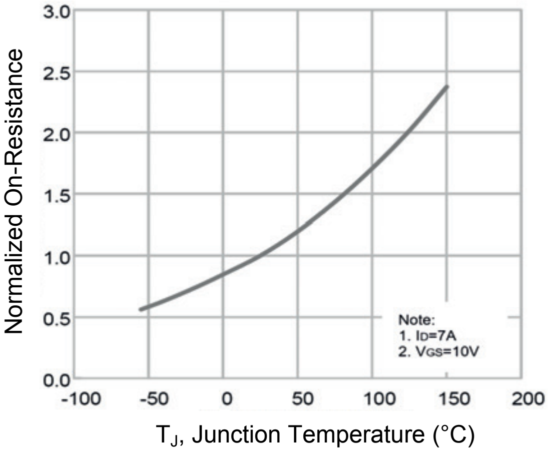


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

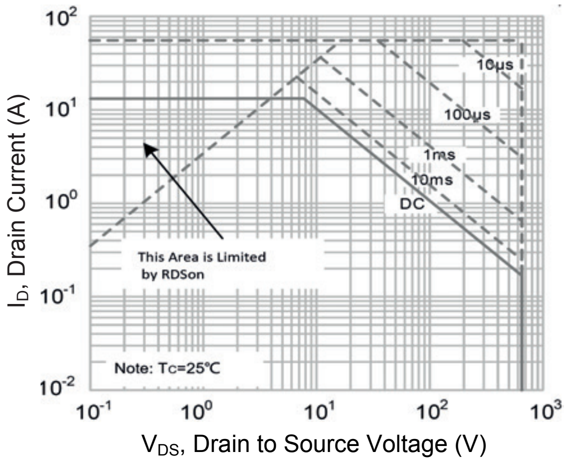
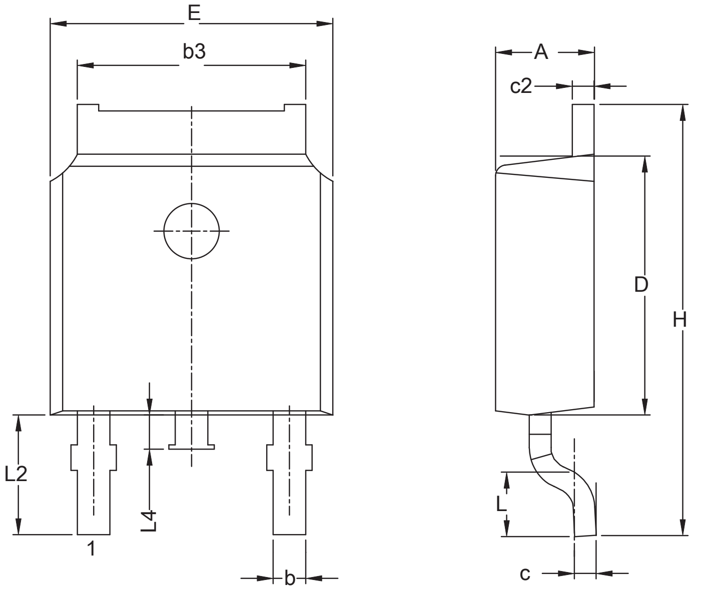


Figure 9. Safe Operation Area

Package Outline Dimensions TO-252(DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	2.500	0.055	0.098
b	0.500	0.900	0.020	0.035
b3	5.100	5.500	0.201	0.217
c	0.400	0.650	0.016	0.026
c2	0.460	0.580	0.018	0.023
D	5.400	6.400	0.213	0.252
E	6.300	6.900	0.248	0.272
e	2.186	2.386	0.086	0.094
H	9.400	10.300	0.370	0.406
L	1.390	1.770	0.055	0.070
L4	0.600	1.100	0.024	0.043
L2	2.850REF		0.112REF	

Order Information

Device	Package	Marking	Carrier	Quantity
GSJD65R290	TO-252 (DPAK)	D65R290	Tape & Reel	2,500pcs / Reel

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