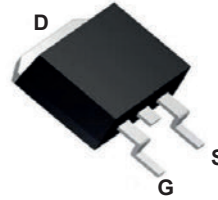
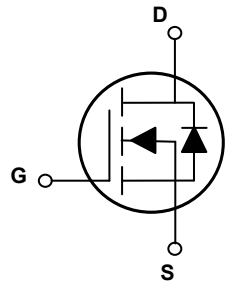


Main Product Characteristics

$V_{(BR)DSS}$	650V
$R_{DS(ON)}$	170m Ω (Typ.)
I_D	20A



TO-263



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 GSJT65R220 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	Parameter	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-to-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current, @ Steady-State ($T_C=25^{\circ}\text{C}$)	I_D	20	A
Continuous Drain Current, @ Steady-State ($T_C=100^{\circ}\text{C}$)		12	A
Pulsed Drain Current	I_{DM}	80	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	208	W
		1.66	W/ $^{\circ}\text{C}$
Single Pulse Avalanche Energy ¹	E_{AS}	657	mJ
Body Diode Reverse Voltage Slope ²	dv/dt	15	V/ns
MOS dv/dt Ruggedness ³	dv/dt	100	V/ns
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.5	$^{\circ}\text{C/W}$
Junction-to-Case	$R_{\theta JC}$	0.62	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to + 150	$^{\circ}\text{C}$

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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	650	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$	-	-	1	μA
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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=10A$	-	170	220	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=100V, f=1MHz$	-	1718	-	pF
Output Capacitance	C_{oss}		-	66	-	
Reverse Transfer Capacitance	C_{rss}		-	1.7	-	
Total Gate Charge ^{4,5}	Q_g	$I_D=20A, V_{DD}=520V, V_{GS}=10V$	-	48	-	nC
Gate-to-Source Charge ^{4,5}	Q_{gs}		-	20	-	
Gate-to-Drain ("Miller") Charge ^{4,5}	Q_{gd}		-	19	-	
Turn-On Delay Time ^{4,5}	$t_{d(on)}$	$V_{DD}=325V, V_{GS}=10V, R_G=25\Omega, I_D=20A$	-	32	-	nS
Rise Time ^{4,5}	t_r		-	96	-	
Turn-Off Delay Time ^{4,5}	$t_{d(off)}$		-	105	-	
Fall Time ^{4,5}	t_f		-	75	-	
Gate Resistance	R_g	$f=1MHz$	-	1.3	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	$T_C=25^\circ\text{C}$, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	20	A
Source Pulse Current	I_{SM}		-	-	80	A
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	-	1.1	1.4	V
Reverse Recovery Time ²	T_{rr}	$I_F=20A, V_{DD}=50V, di_F/dt=100A/\mu s$	-	330	-	nS
Reverse Recovery Charge ²	Q_{rr}		-	5.7	-	μC

Note:

1. $L=79mH, I_{AS}=3.8A, V_{DD}=100V, R_g=25\Omega$, starting temperature $T_J=25^\circ\text{C}$.
2. $V_{DS}=0-400V, I_{SD}\leq I_S, T_J=25^\circ\text{C}$.
3. $V_{DS}=0-480V$.
4. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

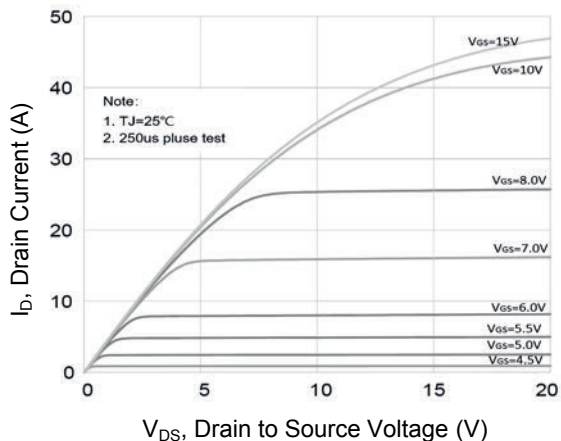


Figure 1. Typical Output Characteristics

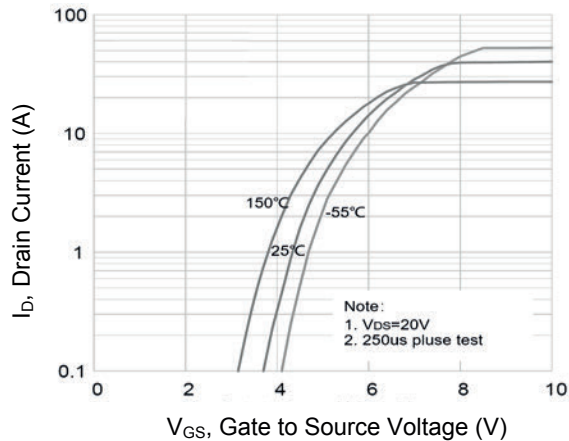


Figure 2. Transfer Characteristics

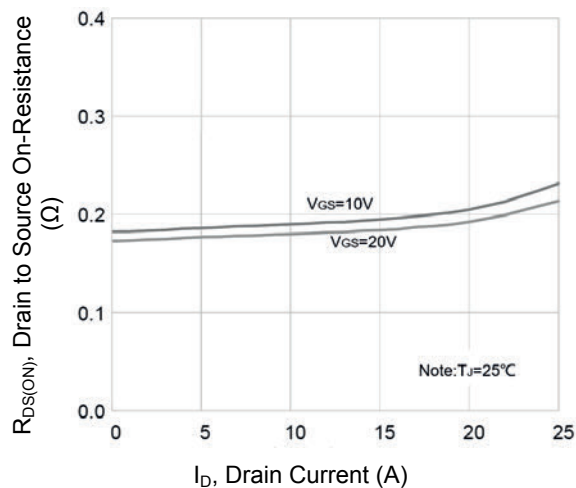


Figure 3. $R_{DS(ON)}$ Vs. Drain Current

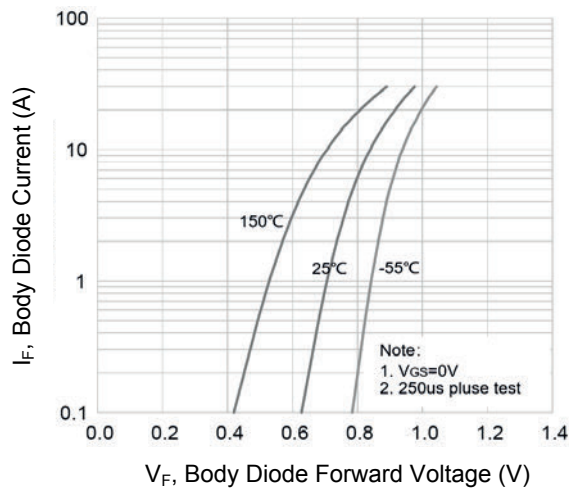


Figure 4. Body Diode Characteristics

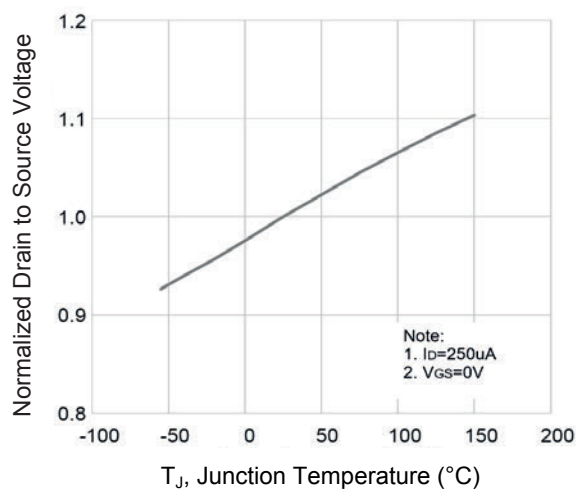


Figure 5. Normalized BV_{DS} Vs. T_J

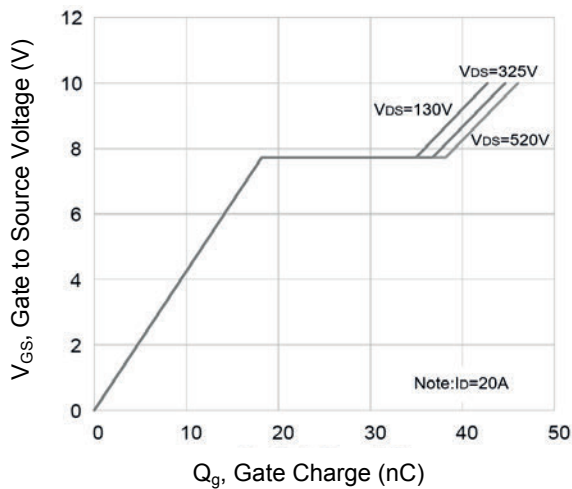


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

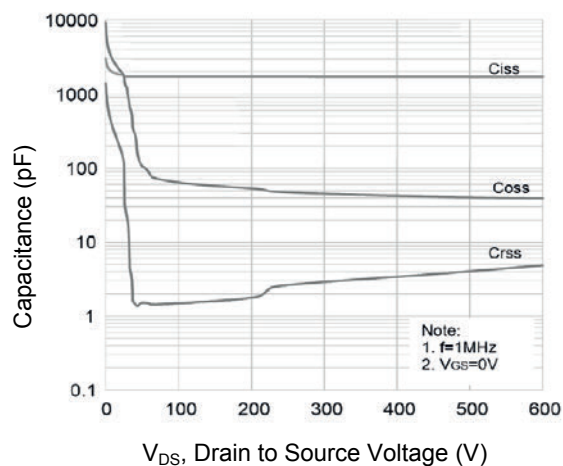


Figure 7. Capacitance Characteristics

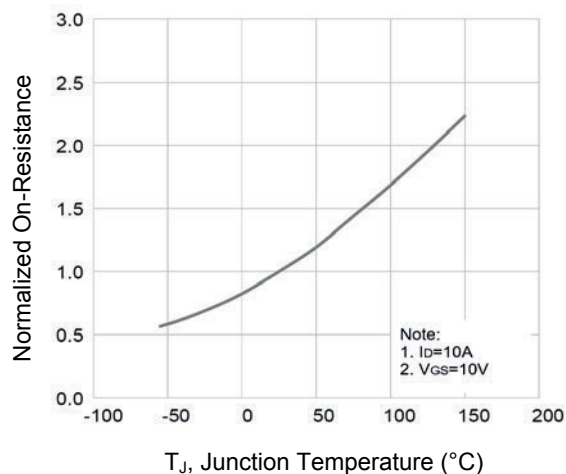


Figure 8. Normalized $R_{DS(ON)}$ Vs. T_J

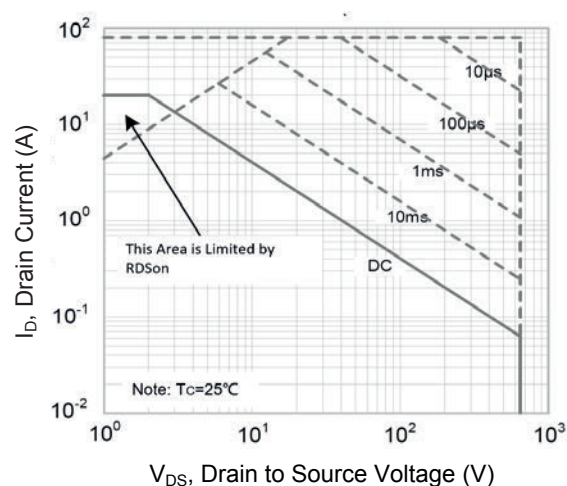
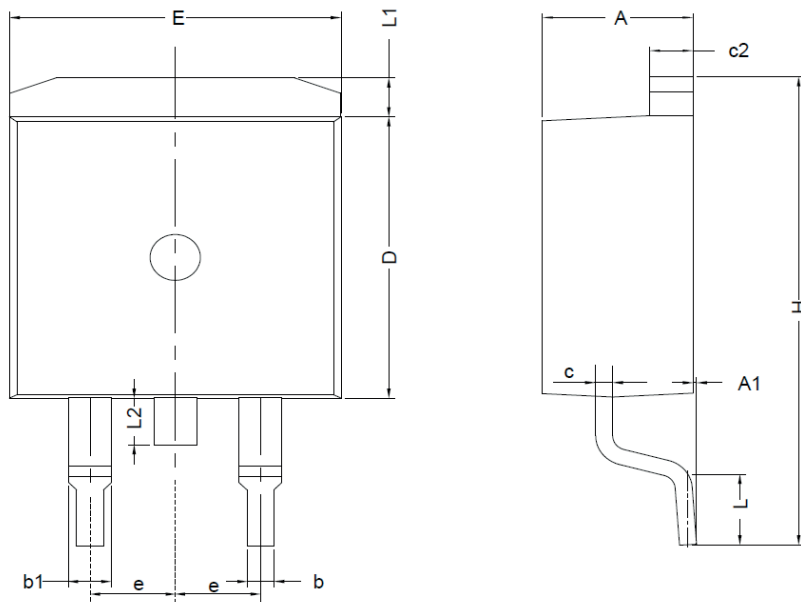


Figure 9. Safe Operation Area

Package Outline Dimensions TO-263(D2PAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.72	0.169	0.186
A1	0.00	0.25	0.000	0.010
b	0.71	0.91	0.028	0.036
b1	1.17	1.50	0.046	0.059
C	0.30	0.60	0.012	0.024
c2	1.17	1.37	0.046	0.054
D	8.50	9.35	0.335	0.368
E	9.80	10.45	0.386	0.411
e	2.54 BSC		0.100 BSC	
H	14.70	15.75	0.579	0.620
L	2.00	2.74	0.079	0.108
L1	1.12	1.42	0.044	0.056
L2	-	1.75	-	0.069