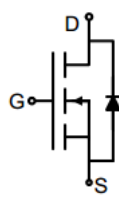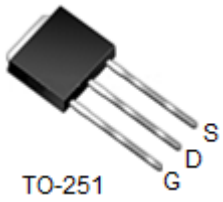# N-Channel Enhancement Mode Power MOSFET

Description

The G20N06J uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

General Features

- V_{DS} 60V
- I_D (at V_{GS} = 10V)   20A
- $R_{DS(ON)}$ (at V_{GS} = 10V)   < 23mΩ
- 100% Avalanche Tested
- RoHS Compliant

Application

- Power switch
- DC/DC converters

Schematic Diagram

TO-251

Device	Package	Marking	Packaging
G20N06J	TO-251	G20N06	70pcs/Tube

Absolute Maximum Ratings T_C = 25⁰C, unless otherwise noted

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Continuous Drain Current		I_D	20	A
Pulsed Drain Current	(note1)	I_{DM}	80	A
Gate-Source Voltage		V_{GS}	±20	V
Power Dissipation		P_D	38	W
Single pulse avalanche energy	（note3）	E_{AS}	36	mJ
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 To 150	⁰C

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	3.3	⁰C/W

Specifications T_J = 25⁰C, unless otherwise noted

| Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250µA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V	--	--	1	µA
Gate-Source Leakage	I_{GSS}	V_{GS} = $\pm$20V	--	--	$\pm$100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	1	1.5	2	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	--	20	27	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5A	11	--	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 30V, f = 1.0MHz	--	500	--	pF
Output Capacitance	C_{oss}		--	60	--	
Reverse Transfer Capacitance	C_{rss}		--	25	--	
Total Gate Charge	Q_g	V_{DS} = 30V, I_D = 4.5A, V_{GS} = 10V	--	25	--	nC
Gate-Source Charge	Q_{gs}		--	4.5	--	
Gate-Drain Charge	Q_{gd}		--	6.5	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 30V, I_D = 2A, R_G = 3Ω	--	5	--	ns
Turn-on Rise Time	t_r		--	2.6	--	
Turn-off Delay Time	$t_{d(off)}$		--	16.1	--	
Turn-off Fall Time	t_f		--	2.3	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25⁰C	--	--	20	A
Body Diode Voltage	V_{SD}	T_J = 25⁰C, I_{SD} = 10A, V_{GS} = 0V	--	--	1.2	V

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. Identical low side and high side switch with identical R_G

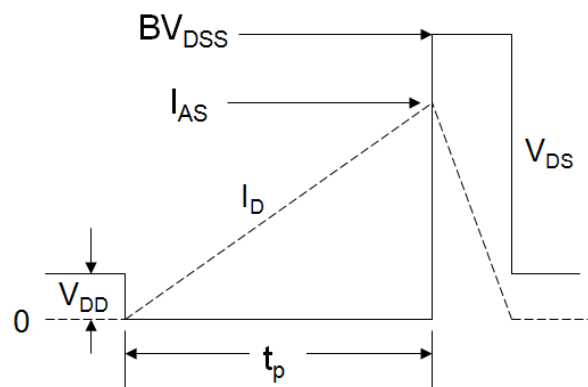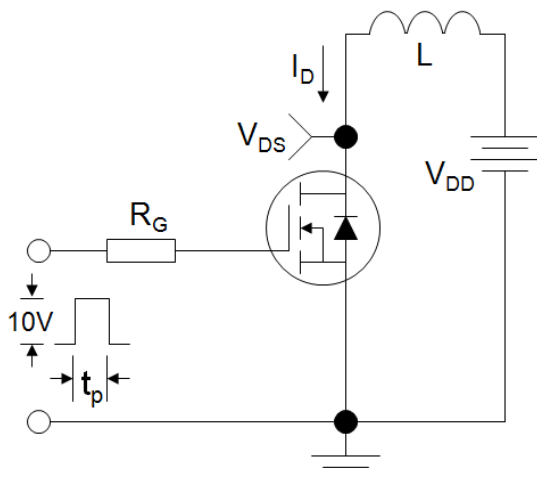3. EAS condition : Tj=25℃ ,VDD=50V,VGS=10V,L=0.5mH,Rg=25Ω

Gate Charge Test Circuit
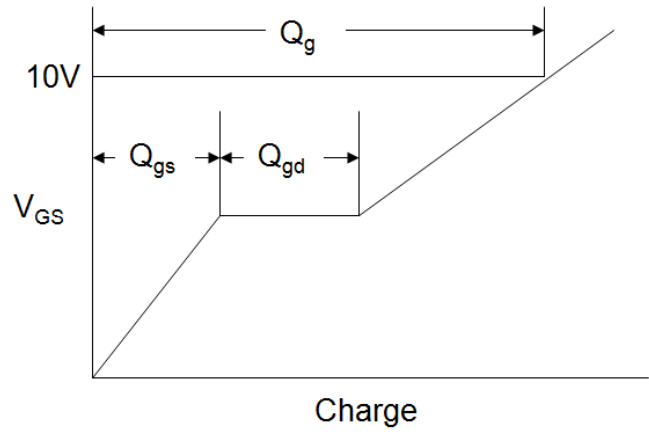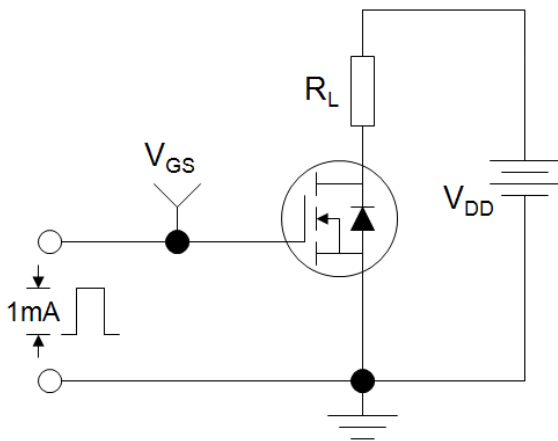
EAS Test Circuit
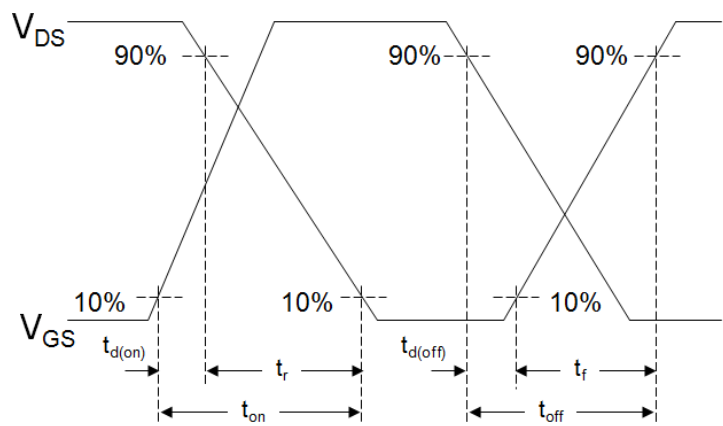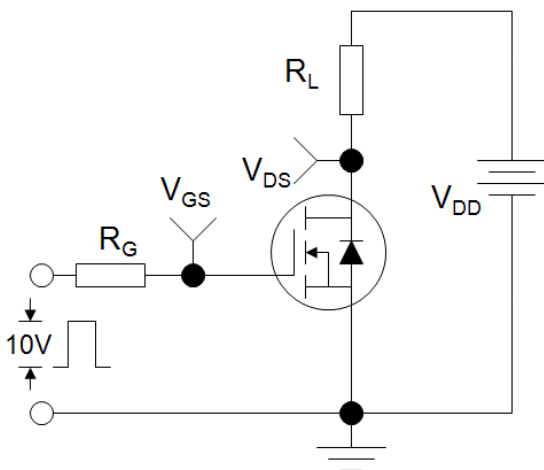
Switch Time Test Circuit

Typical Characteristics $T_J = 25^oC$, unless otherwise noted
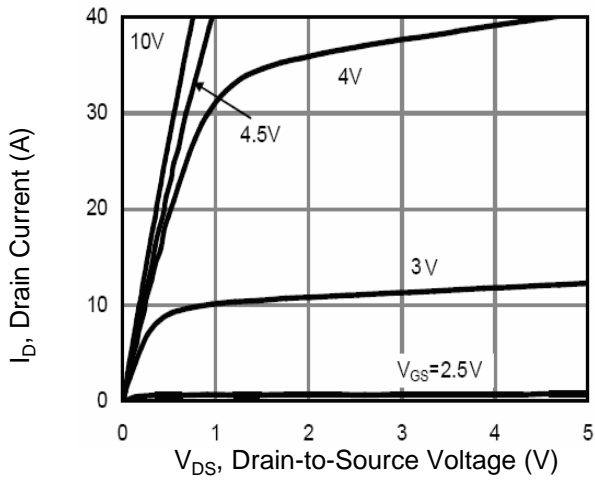
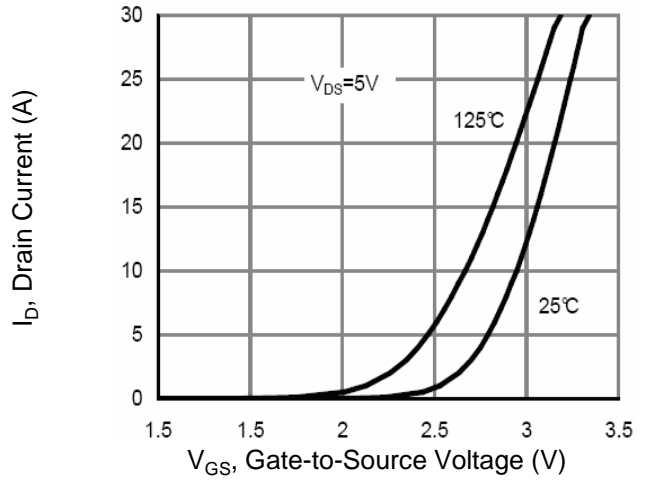**Figure 1. Output Characteristics**

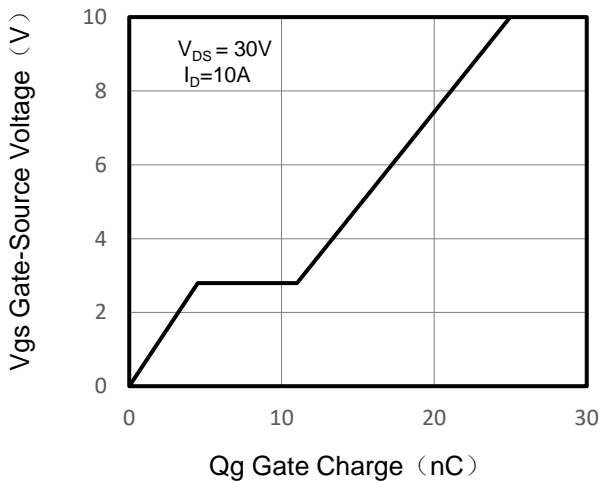**Figure 2. Transfer Characteristics**

Figure 3. Gate Charge
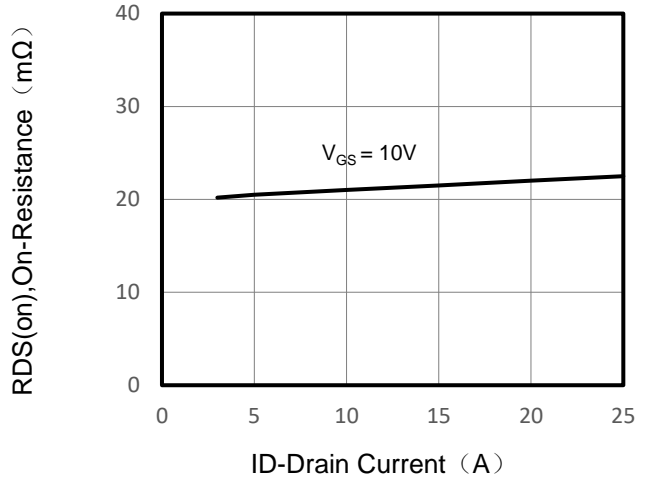
Figure 4. Drain Source On Resistance
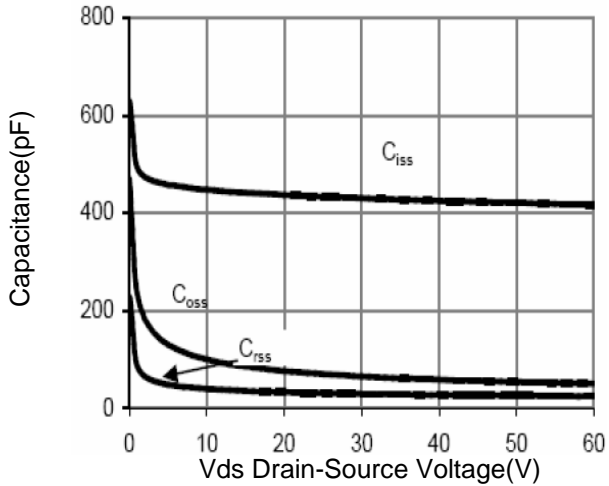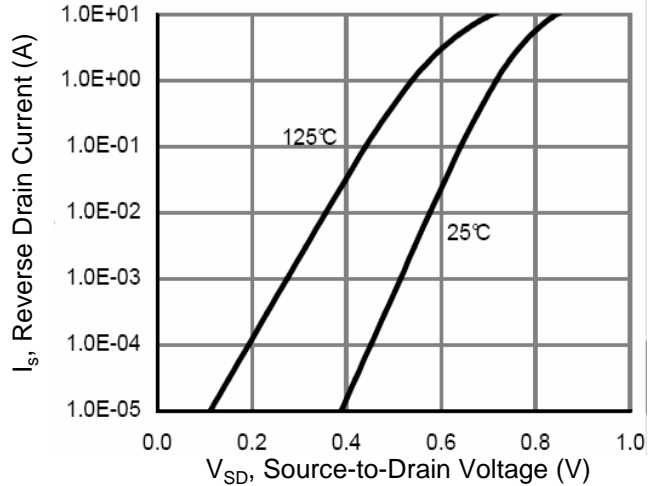
Figure 5. Capacitance vs Vds

Figure 6. Source-Drain Diode Forward

Typical Characteristics $T_J = 25\mathbf{^oC}$, unless otherwise noted

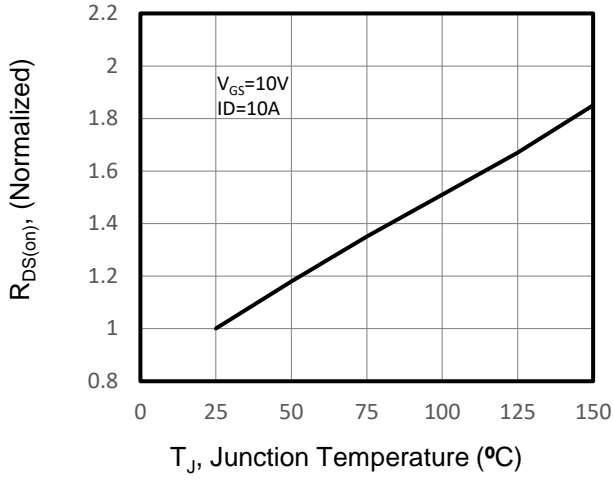**Figure 7. Drain-Source On-Resistance**

T_J, Junction Temperature (^oC)

Figure 8. Safe Operation Area

V_{DS}, Drain-Source Voltage(V)
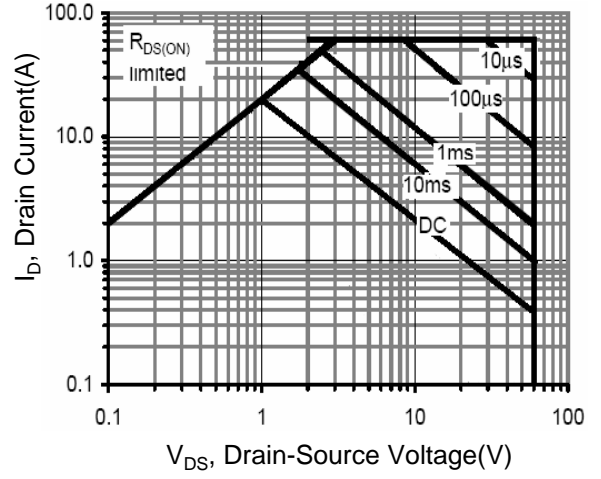
**Figure 9. Normalized Maximum Transient
Thermal Impedance**

Pulse Width (s)
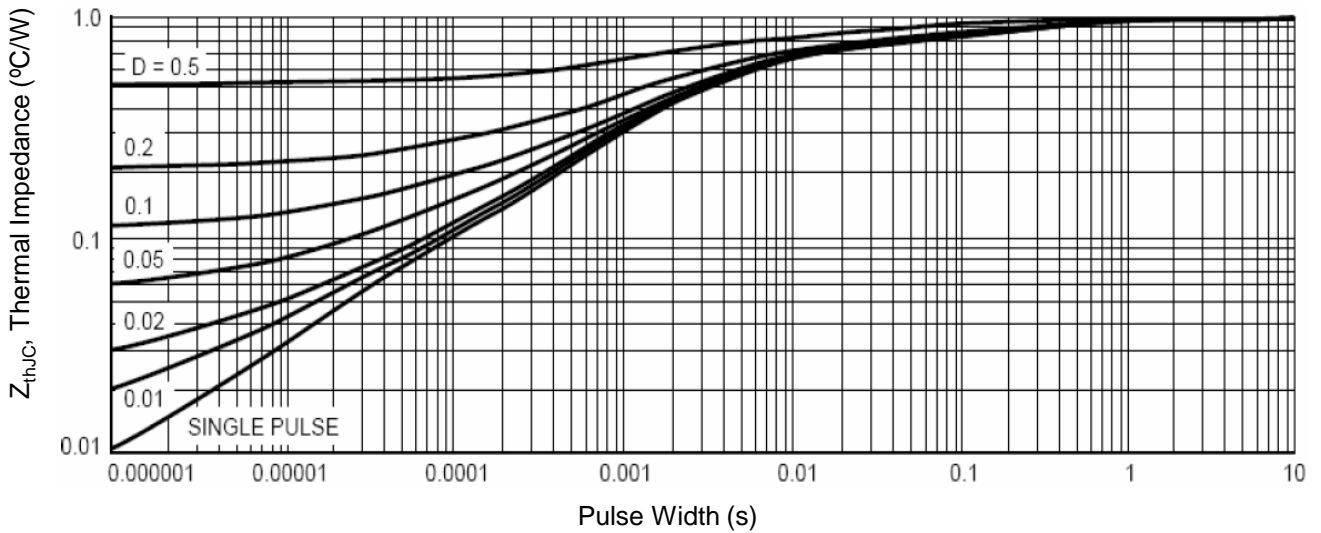
TO-251 Package information

印字面
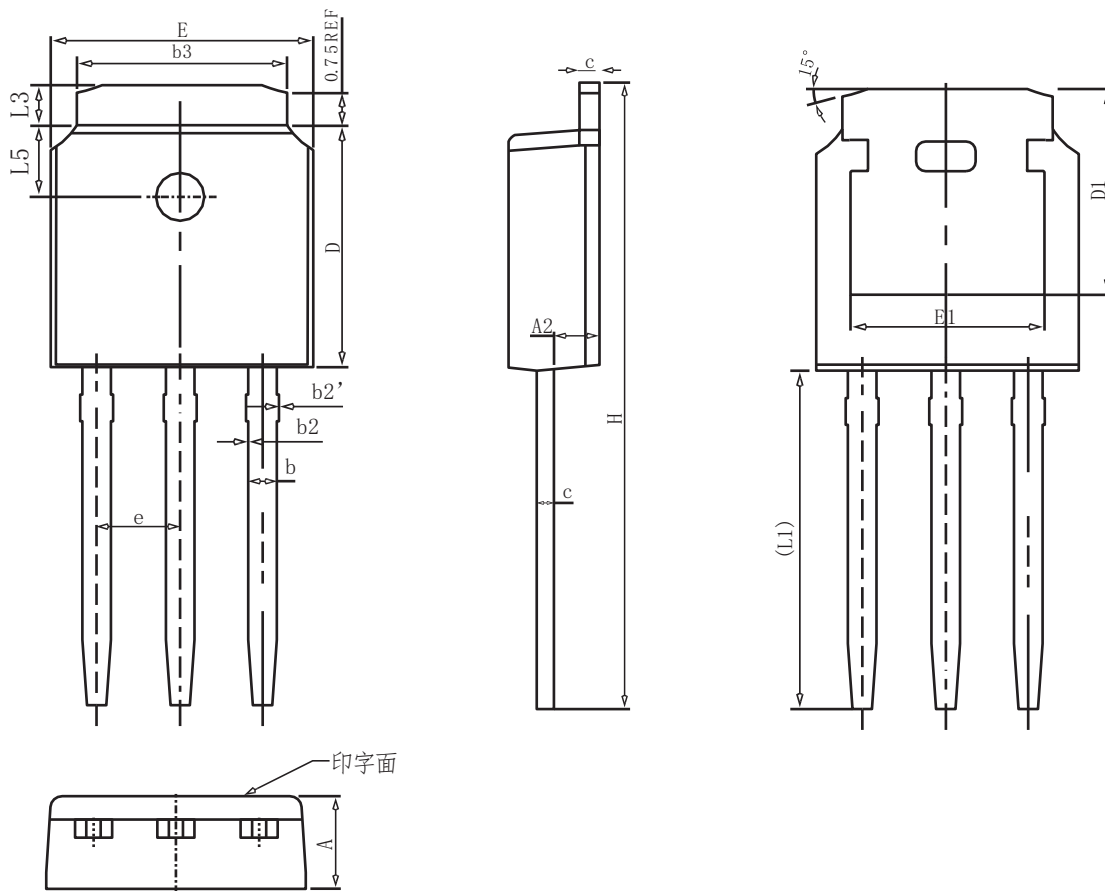
COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	2.20	2.30	2.40
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b2	0.00	0.04	0.10
b2'	0.00	0.04	0.10
b3	5.20	5.33	5.50
c	0.43	0.53	0.63
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	–	–
e	2.286BSC		
H	16.22	16.52	16.82
L1	9.15	9.40	9.65
L3	0.88	1.02	1.28
L5	1.65	1.80	1.95

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IPS70R2K0CEAKMA1 RJK60S3DPP-E0#T2 RJK60S5DPK-M0#T0 APT5010JVFR APT12031JFLL APT12040JVR DMN3404LQ-7
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