



### General Description

The IPG20N06S4L-26 use advanced SGT MOSFET technology to provide low RDS(ON), low gate charge, fast switching and excellent avalanche characteristics.

This device is specially designed to get better ruggedness and suitable to use in

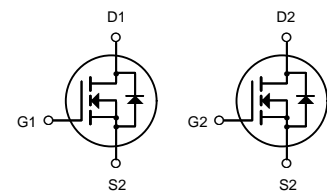
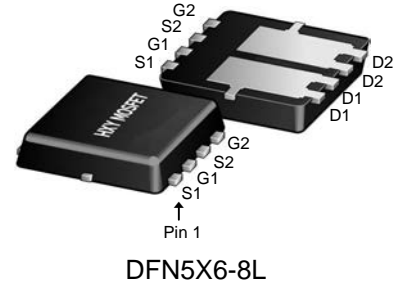
### General Features

$V_{DS} = 60V$   $I_D = 50 A$

$R_{DS(ON)} < 14m\Omega$  @  $V_{GS} = 10V$

### Applications

- Consumer electronic power supply Motor control
- Synchronous-rectification Isolated DC
- Synchronous-rectification applications



Dual N-Channel MOSFET

### Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
IPG20N06S4L-26	DFN5X6-8L	20N06S4 XXXX	5000

### Absolute Maximum Ratings (T<sub>C</sub>=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units	
$V_{DSS}$	Drain-Source Voltage	60	V	
$V_{GSS}$	Gate-Source Voltage	±20	V	
$I_D$	Continuous Drain Current	$T_C = 25^\circ C$	50	A
		$T_C = 100^\circ C$	29	A
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	180	A	
$E_{AS}$	Single Pulsed Avalanche Energy <sup>note2</sup>	36	mJ	
$P_D$	Power Dissipation	$T_C = 25^\circ C$	60	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.5	°C/W	
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +175	°C	



### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V,	-	-	1.0	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.6	2.5	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance <small>note3</small>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	-	11	14	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A	-	14	20	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHz	-	930	-	pF
C <sub>oss</sub>	Output Capacitance		-	230	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	8	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =30V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V	-	22	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	4.5	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	3.5	-	nC
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =30V, I <sub>D</sub> =20A, R <sub>G</sub> =1.6Ω, V <sub>GS</sub> =10V	-	4.5	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	2.7	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	13.8	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	2.7	-	ns
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	45	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	180	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =30A	-	-	1.2	V
t <sub>rr</sub>	Body Diode Reverse Recovery Time	T <sub>J</sub> =25°C, I <sub>F</sub> =20A, dI/dt=100A/μs	-	18	-	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge		-	12	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

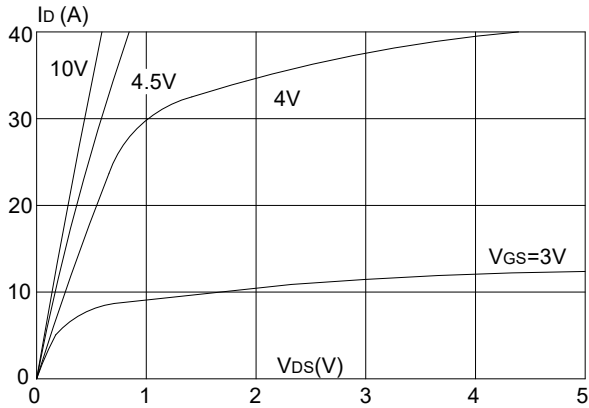
2. EAS condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=30V, V<sub>G</sub>=10V, R<sub>G</sub>=25Ω, L=0.5mH, I<sub>AS</sub>=12A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

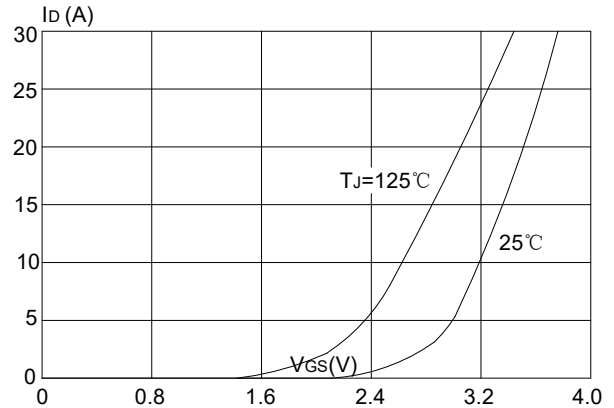


## Typical Performance Characteristics

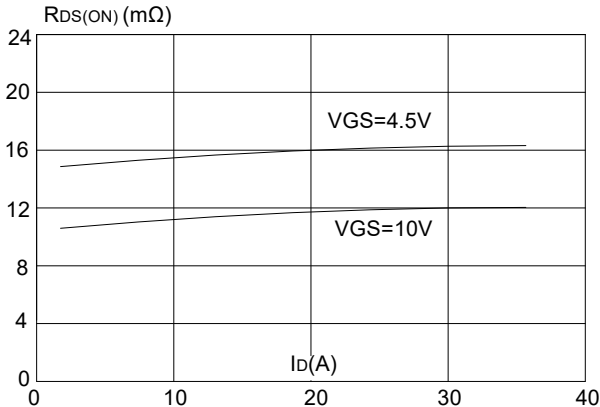
**Figure 1: Output Characteristics**



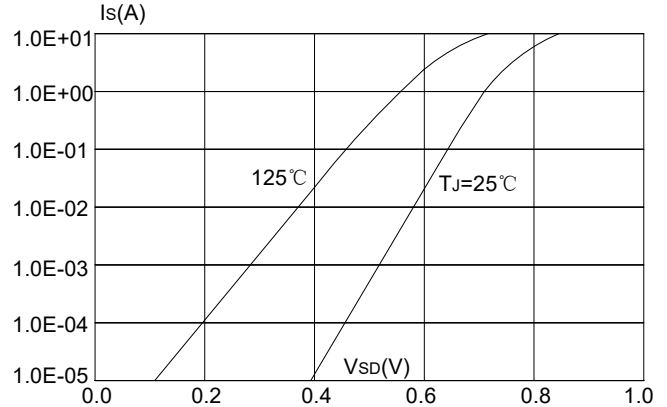
**Figure 2: Typical Transfer Characteristics**



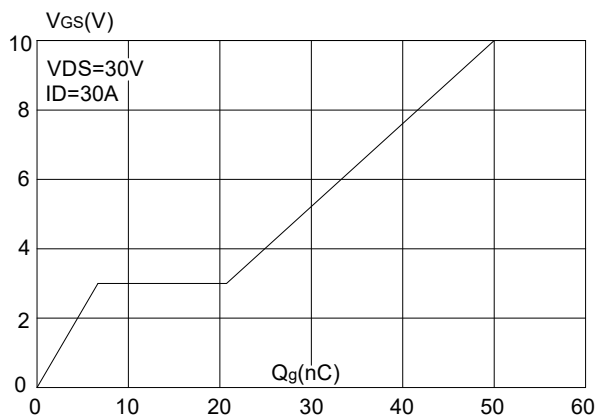
**Figure 3: On-resistance vs. Drain Current**



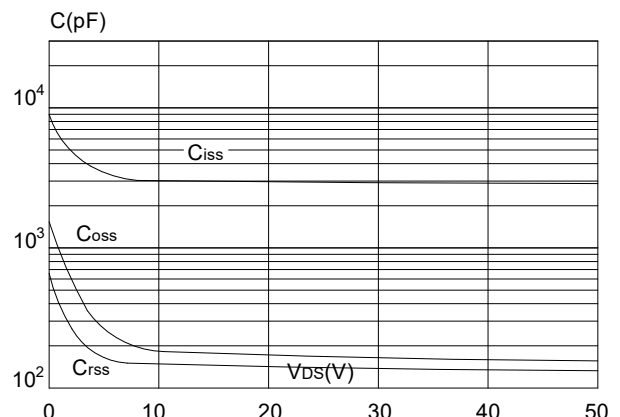
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**

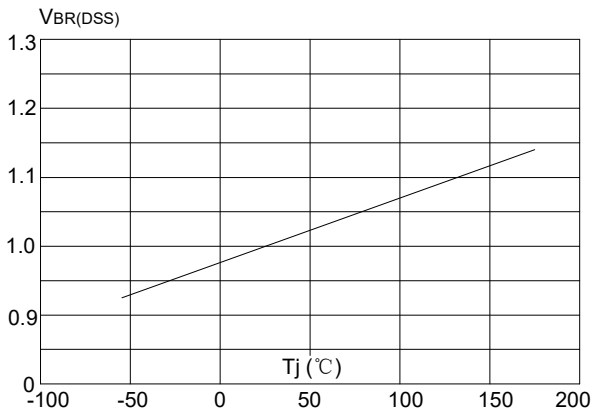


**Figure 6: Capacitance Characteristics**

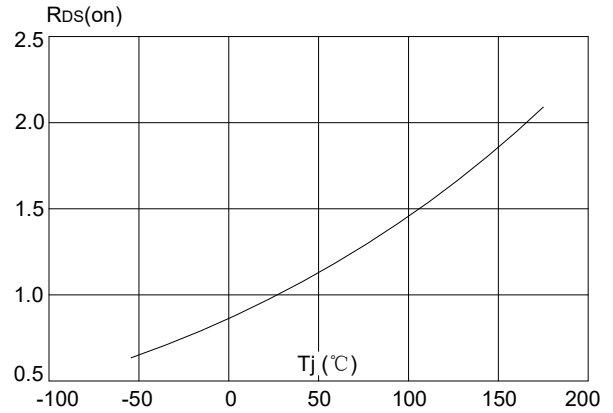




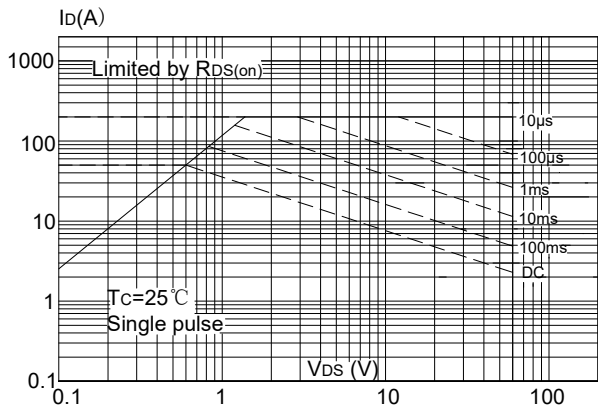
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



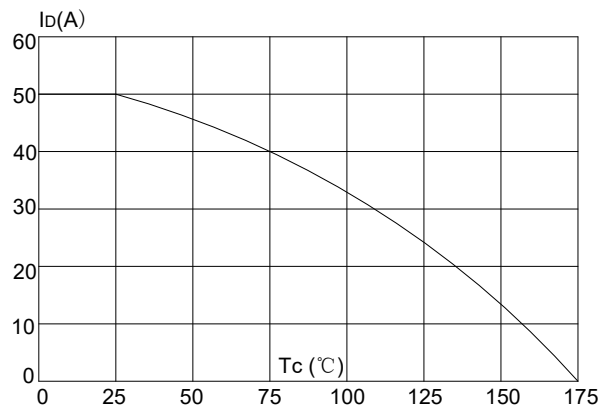
**Figure 8:** Normalized on Resistance vs. Junction Temperature



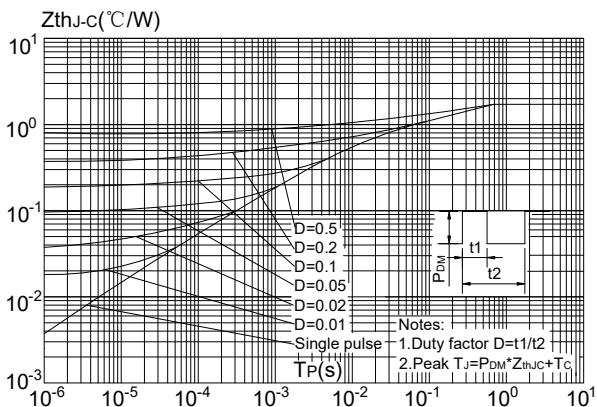
**Figure 9:** Maximum Safe Operating Area



**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

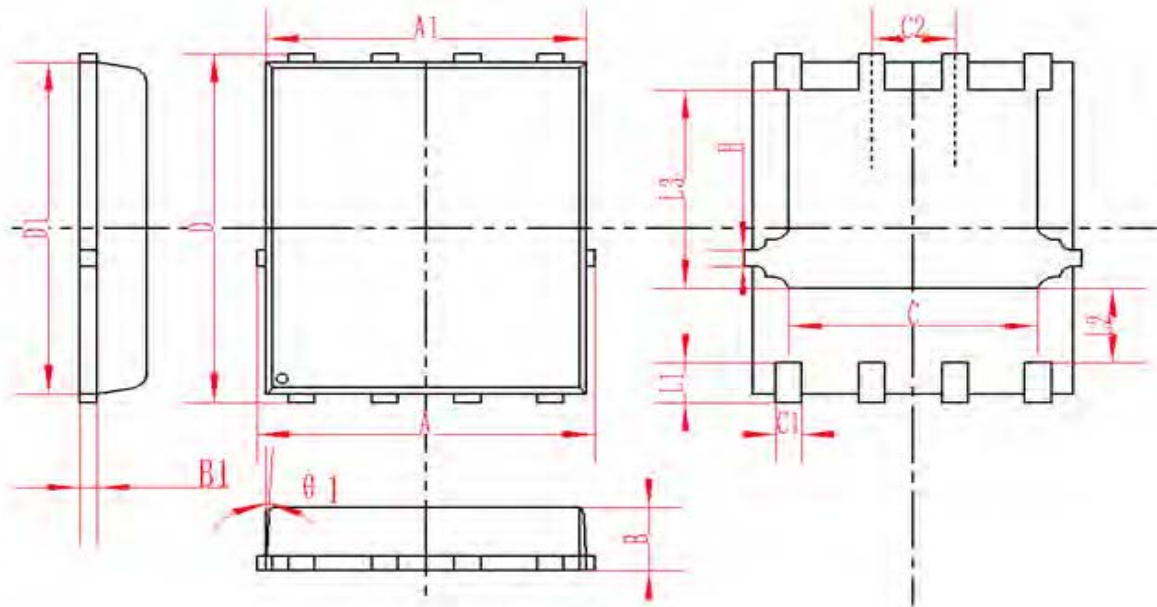


**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case





### DFN5X6-8L Package Information



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.95	5	5.05	0.195	0.197	0.199
A1	4.82	4.9	4.98	0.190	0.193	0.196
D	5.98	6	6.02	0.235	0.236	0.237
D1	5.67	5.75	5.83	0.223	0.226	0.230
B	0.9	0.95	1	0.035	0.037	0.039
B1	0.254REF			0.010REF		
C	3.95	4	4.05	0.156	0.157	0.159
C1	0.35	0.4	0.45	0.014	0.016	0.018
C2	1.27TYP			0.5TYP		
θ1	8°	10°	12°	8°	10°	12°
L1	0.63	0.64	0.65	0.025	0.025	0.026
L2	1.2	1.3	1.4	0.047	0.051	0.055
L3	3.415	3.42	3.425	0.134	0.135	0.135
H	0.24	0.25	0.26	0.009	0.010	0.010



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