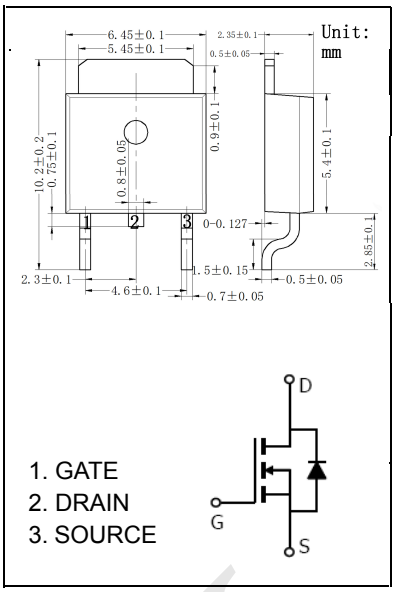
SHEN ZHEN LONG JING MICRO-ELECTRONICS CO.,LTD

TO-252 Plastic-Encapsulate MOSFETS

LJ5N20NT10G

N-CHANNEL 200V - 0.65 Ω - 5A DPAK



General Description

The LJ5N20NT10G utilizes the latest advanced design rules of ST's proprietary STripFET™ technology. This is suitable for the most demanding DC Motor Control and lighting application.

FEATURE

- TYPICAL R_{DS}(on) = 0.55 Ω @ 5V
- CONDUCTION LOSSES REDUCED
- LOW INPUT CAPACIATNCE
- LOW THRESHOLD DEVICE

Absolute Maximum ratings (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-source Voltage (V_{GS} = 0)	200	V
V_{DGR}	Drain-gate Voltage (R_{GS} = 20 kΩ)	200	V
V_{GS}	Gate- source Voltage	±20	V
I_D	Drain Current (continuous) at T_C = 25°C	5	A
I_D	Drain Current (continuous) at T_C = 100°C	3.6	A
I_{DM} (•)	Drain Current (pulsed)	20	A
P_{TOT}	Total Dissipation at T_C = 25°C	33	W
	Derating Factor	0.27	W/°C
T_{stg}	Storage Temperature	–55 to 150	°C
T_j	Operating Junction Temperature		

(•) Pulse width limited by safe operating area

Thermal Data

Rthj-case	Thermal Resistance Junction-case Max	3.75	°C/W
Rthj-amb	Thermal Resistance Junction-ambient Max	100	°C/W
T_l	Maximum Lead Temperature For Soldering Purpose	275	°C

ELECTRICAL CHARACTERISTICS (T_{CASE} =25°C UNLESS OTHERWISE SPECIFIED)

On/Off

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source Breakdown Voltage	I_D = 250 µA, V_{GS} = 0	200			V
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0)	V_{DS} = Max Rating			1	µA
		V_{DS}= Max Rating, T_C= 125°C			10	µA
I_{GSS}	Gate-body Leakage Current (V_{DS} = 0)	V_{GS} = ±20V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 50µA	1		2.5	V
$R_{DS(on)}$	Static Drain-source On Resistance	V_{GS} = 5 V, I_D = 2.5 A		0.55	0.7	Ω

Dynamic

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
g_{fs} (2)	Forward Transconductance	V_{DS} = 15 V, I_D = 5 A		6.5		S
C_{iss}	Input Capacitance	V_{DS} = 25V, f = 1 MHz, V_{GS} = 0		400		pF
C_{oss}	Output Capacitance			52		pF
C_{rss}	Reverse Transfer Capacitance			7		pF
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = 100 V, I_D = 2.5 A		17.5		ns
t_r	Rise Time	R_G = 4.7Ω, V_{GS} = 5V		25		ns
$t_{d(off)}$	Turn-off Delay Time	(Resistive Load see Figure 14)		19		ns
t_f	Fall Time			21.5		ns
Q_g	Total Gate Charge	V_{DD} = 160 V, I_D = 5 A,		5	6	nC
Q_{gs}	Gate-Source Charge	V_{GS} = 5V		1.5		nC
Q_{gd}	Gate-Drain Charge			3		nC

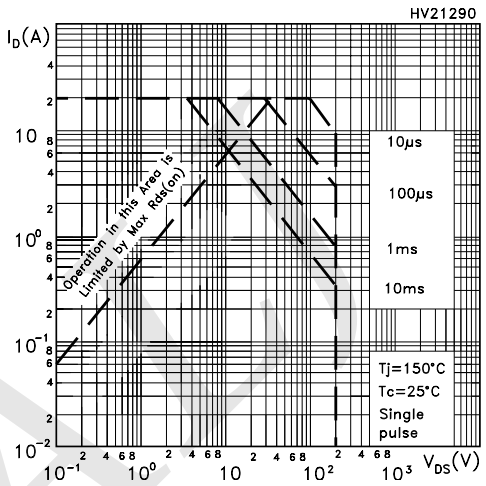
Source Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{SD}	Source-drain Current				5	A
I_{SDM} (*)	Source-drain Current (pulsed)				20	A
V_{SD} (1)	Forward On Voltage	I_{SD} = 5 A, V_{GS} = 0			1.5	V
t_{rr}	Reverse Recovery Time	I_{SD} = 5 A, di/dt = 100 A/µs,		93		ns
Q_{rr}	Reverse Recovery Charge	V_{DD} = 100 V, T_j = 25°C		237		nC
I_{RRM}	Reverse Recovery Current	(see test circuit, see Figure 15)		5.1		A
t_{rr}	Reverse Recovery Time	I_{SD} = 5 A, di/dt = 100 A/µs,		97		ns
Q_{rr}	Reverse Recovery Charge	V_{DD} = 100 V, T_j = 150°C		286		nC
I_{RRM}	Reverse Recovery Current	(see test circuit, see Figure 15)		5.9		A

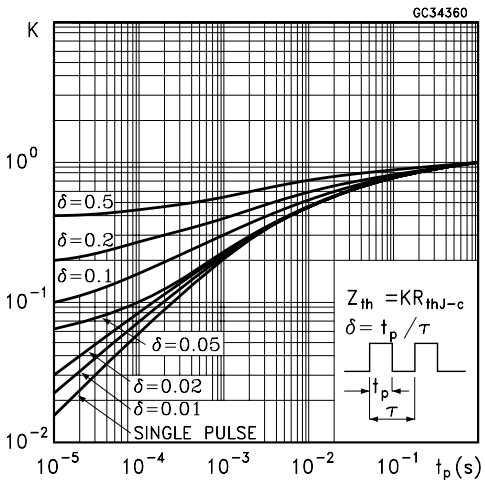
(1) Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %.
(2) Starting T_j =25 °C, I_d = 5 A, V_{DD} = 50 V
(*) Pulse width limited by safe operating area

Typical Characteristics

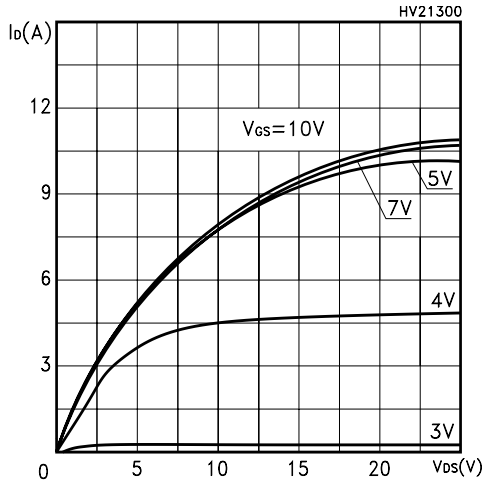
Safe Operating Area



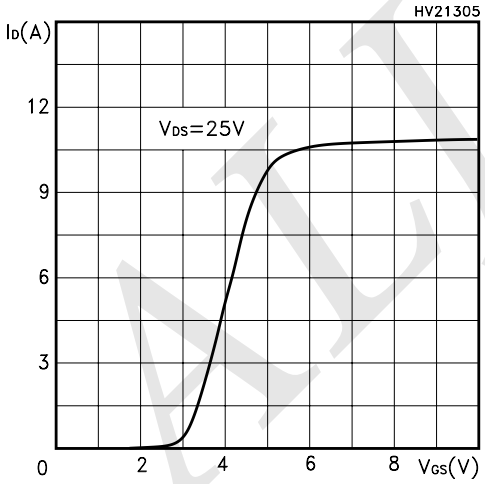
Thermal Impedance



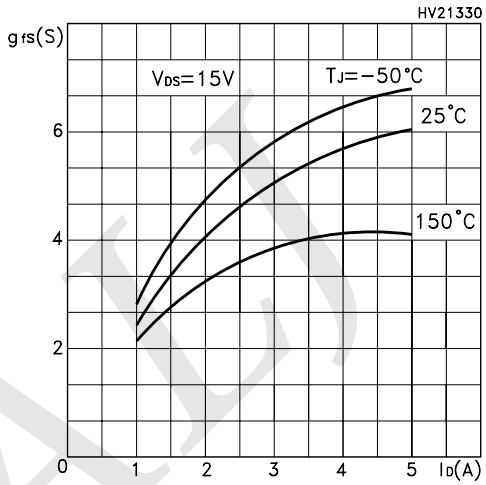
Output Characteristics



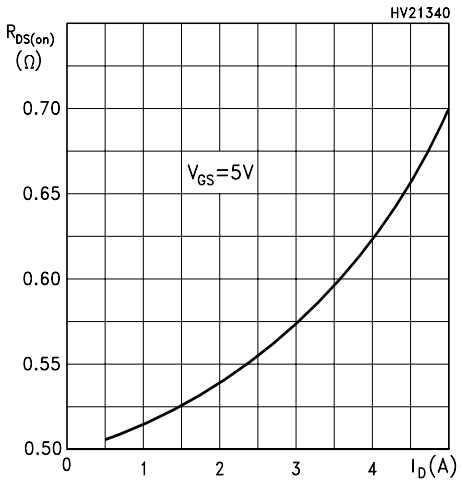
Transfer Characteristics



Transconductance

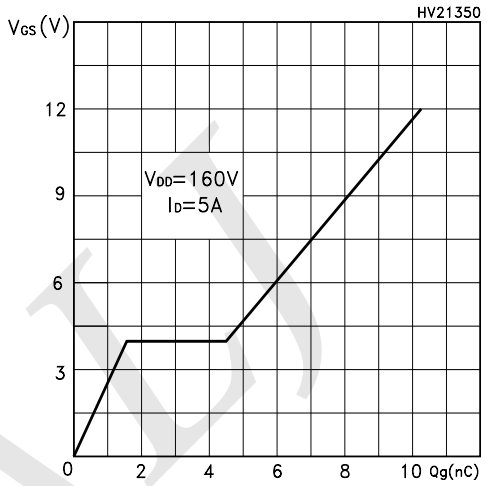


Static Drain-source On Resistance

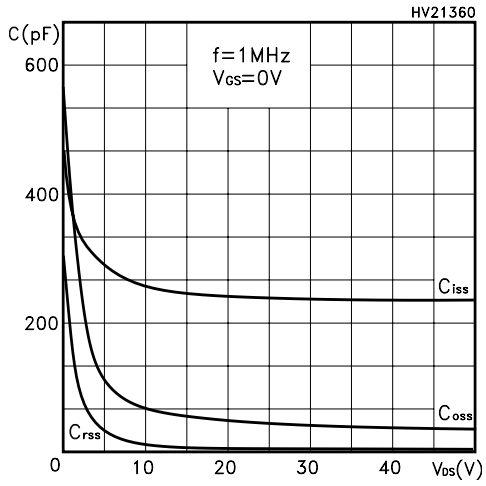


Typical Characteristics

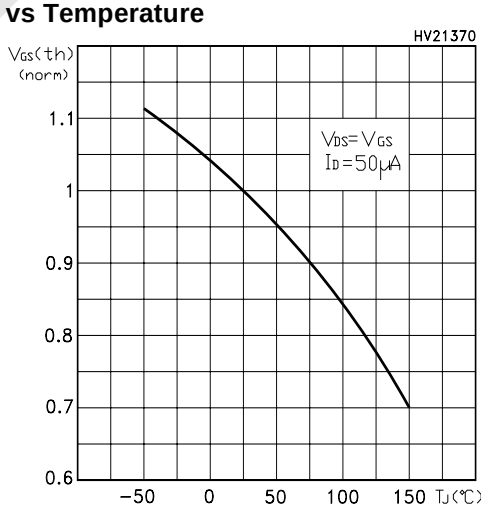
Gate Charge vs Gate-source Voltage



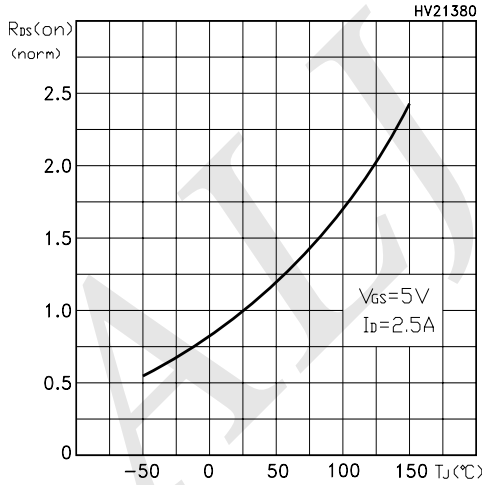
Capacitance Variations



Normalized Gate Thereshold Voltage vs Temperature



perature



Source-Drain Diode Forward Characteristics