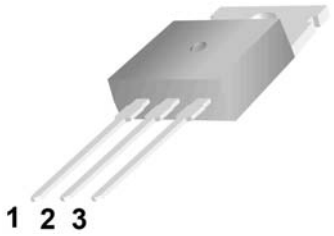
HGS100N15D150V N-Channel MOSFET

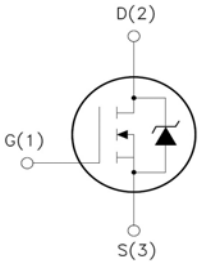
Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 75nC (Typ.).
- ☐ BVDSS=150V,I_D=100A
- ☐ R_{DS}(on) : 13mΩ (Max) @V_G=10V
- ☐ 100% Avalanche Tested

TO-220

RoHS COMPLIANT





1.Gate (G)
2.Drain (D)
3.Source (S)

Absolute Maximum Ratings (Ta=25℃ unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-Source Voltage		150	V
I_D	Drain Current	T_j=25℃	100	A
		T_j=100℃	65	
V_{GSS}	Gate Threshold Voltage		±20	V
E_{AS}	Single Pulse Avalanche Energy (note1)		225	mJ
I_{AR}	Avalanche Current (note2)		100	A
P_D	Power Dissipation (Tj=25℃)		230	W
T_j	Junction Temperature(Max)		150	℃
T_{stg}	Storage Temperature		-55~+150	
TL	Maximum lead temperature for soldering purpose,1/8" from case for 5 seconds		300	

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance,Junction to Case	-	0.65	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	-	62.5	

Electrical Characteristics (Ta=25℃ unless otherwise noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	150	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	V_{DS}=150V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(Tc=125℃)	V_{DS}=150V,V_{GS}=0V	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±25V,V_{DS}=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	3.0	4.0	5.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance③	V_{GS}=12V, I_D=30A	--	11.0	12.5	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance③	V_{GS}=10V, I_D=30A	--	11.2	13.0	mΩ
Dynamic Electrical Characteristics						
C_{iss}	Input Capacitance	V_{DS}=20V,V_{GS}=0V, f=1MHz	--	5960	--	pF
C_{oss}	Output Capacitance		--	485	--	pF
C_{rss}	Reverse Transfer Capacitance		--	125	--	pF
Q_g	Total Gate Charge	V_{DS}=75V,I_D=20A, V_{GS}=10V	--	75	--	nC
Q_{gs}	Gate-Source Charge		--	26	--	nC
Q_{gd}	Gate-Drain Charge		--	20	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=75V, I_D=10A, R_G=6.8Ω, V_{GS}=10V	--	22	--	nS
t_r	Turn-on Rise Time		--	28	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	35	--	nS
t_f	Turn-Off Fall Time		--	12	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	I_{SD}=30A,V_{GS}=0V	--	0.80	1.2	V
t_{rr}	Reverse Recovery Time	T_j=25℃,I_{sd}=20A, V_{GS}=0V di/dt=300A/μs	--	50	--	nS
Q_{rr}	Reverse Recovery Charge			105		nC

NOTE:

① Repetitive rating; pulse width limited by max. junction temperature.

② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH,R_G = 25Ω, I_{AS} = 30A, V_{GS} =10V. Part not recommended for use above this value

③ Pulse width ≤ 300μs; duty cycle≤ 2%.

Typical Characteristics

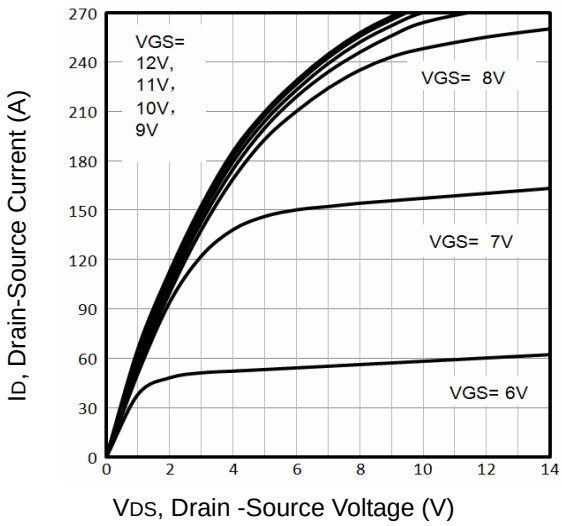


Fig1. Typical Output Characteristics

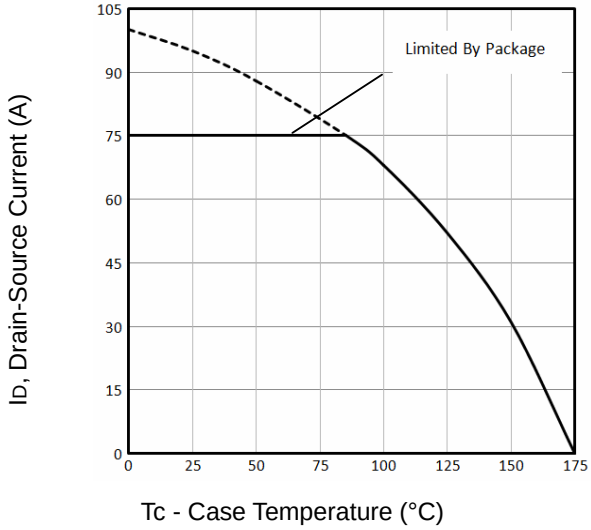


Fig2. Maximum Drain Current Vs Case Temperature

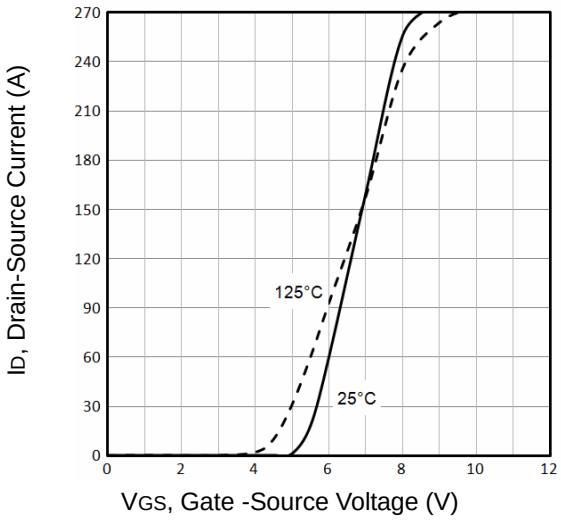


Fig3. Typical Transfer Characteristics

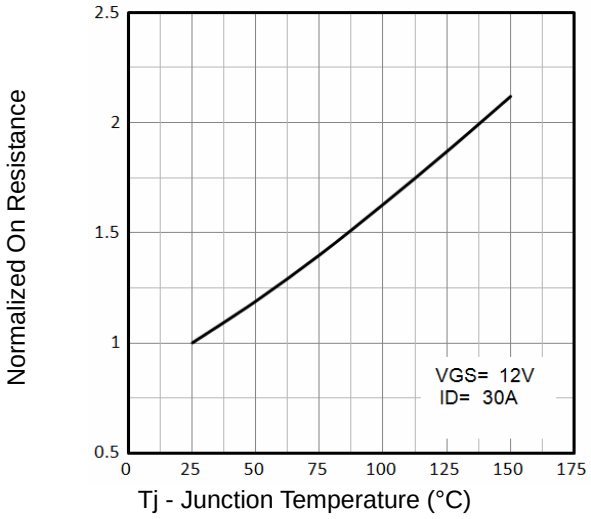


Fig4. Normalized On-Resistance Vs. Temperature

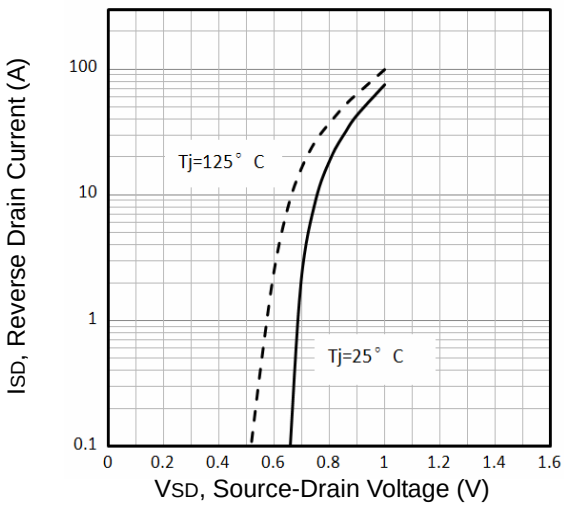


Fig5. Typical Source-Drain Diode Forward Voltage

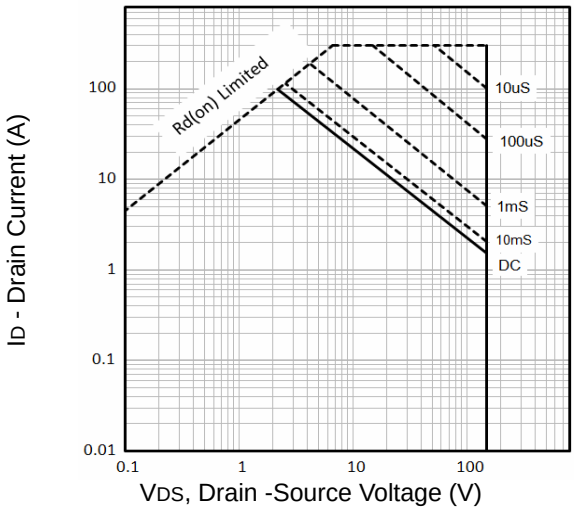


Fig6. Maximum Safe Operating Area

Typical Characteristics

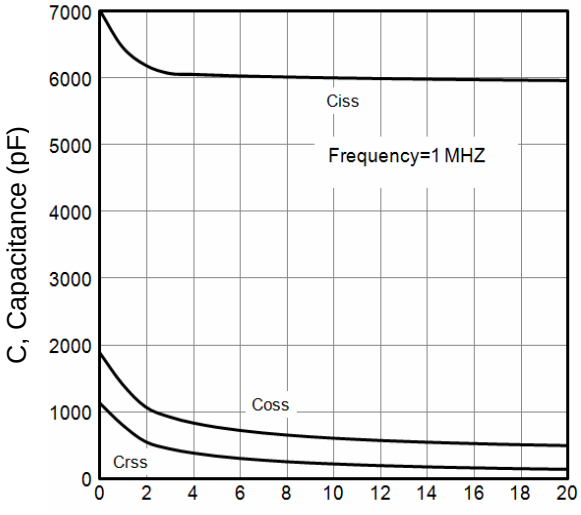


Fig7. Typical Capacitance Vs.Drain-Source Voltage

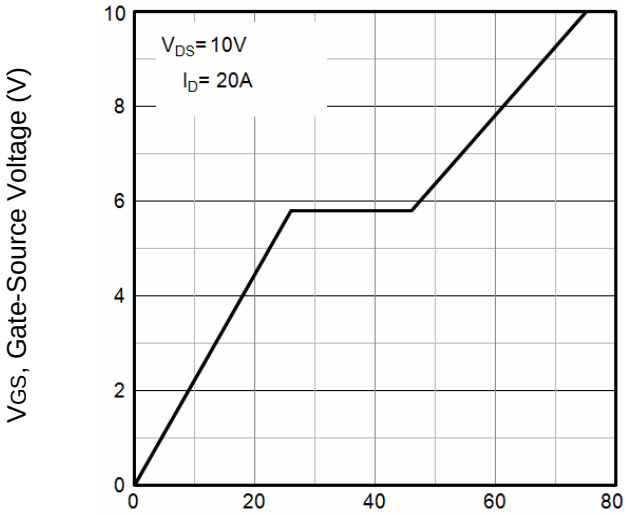


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

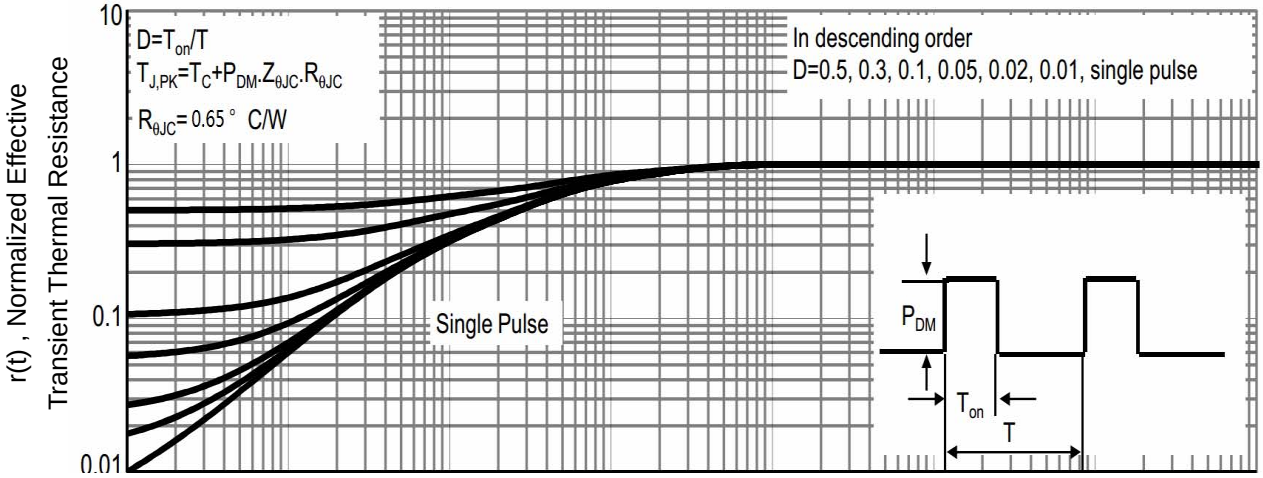


Fig9. Normalized Maximum Transient Thermal Impedance

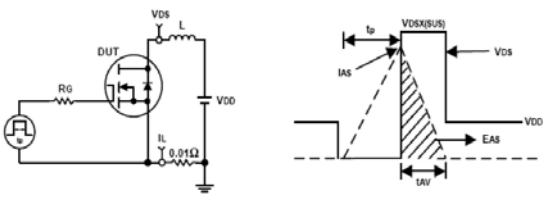


Fig10. Unclamped Inductive Test Circuit and waveforms

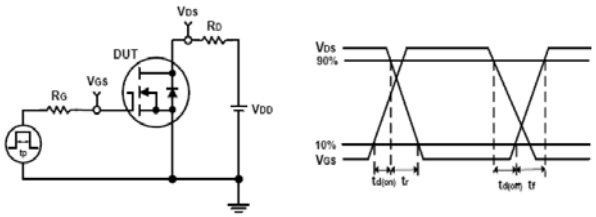
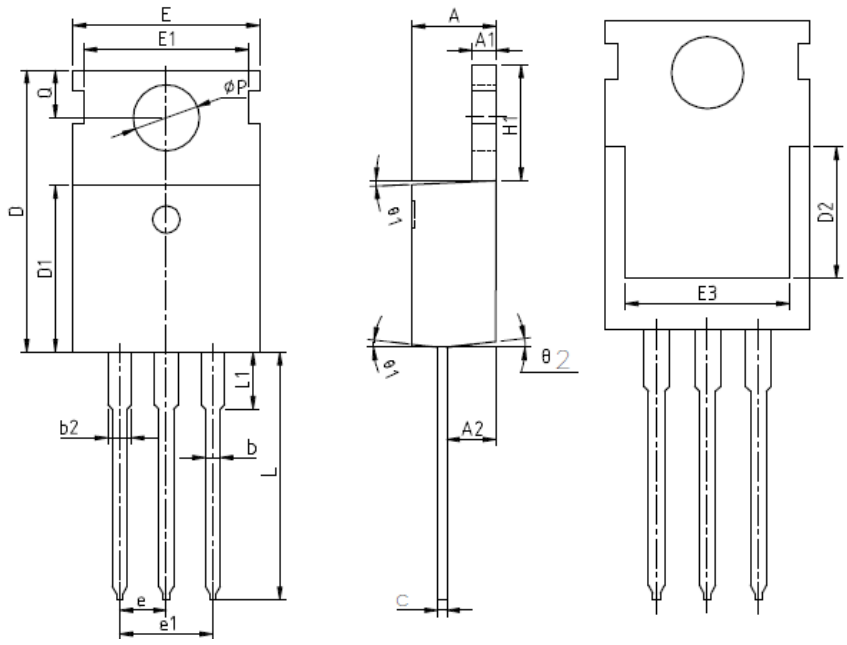


Fig11. Switching Time Test Circuit and waveforms

Package Dimension

TO-220



SYMBOL	MIN	NOM	MAX
A	4.27	4.57	4.87
A1	1.15	1.30	1.45
A2	2.10	2.40	2.70
b	0.70	0.80	1.00
b2	1.17	1.27	1.50
c	0.40	0.50	0.65
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.70	6.70	7.00
E	9.70	10.00	10.30
E1	-	8.70	-
E2	9.65	10.00	10.35
E3	7.00	8.00	8.40
e		2.54 BSC	
e1		5.08 BSC	
H1	6.00	6.50	6.85
L	12.75	13.50	13.90
L1	-	3.10	3.40
ΦP	3.45	3.60	3.75
Q	2.60	2.80	3.00
θ1	4°	7°	10°
θ2	0°	3°	6°