

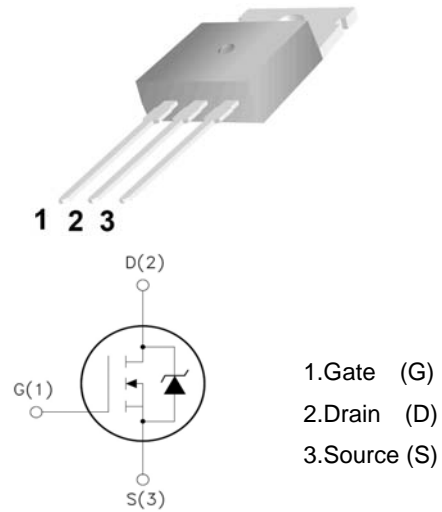


HCS100N15D150V N-Channel MOSFET

Features:

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

TO-220



Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	150	V
I _D	Drain Current	T _j =25°C	100
		T _j =100°C	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 (T _j =25°C)	230	W
T _j	Junction Temperature(Max)	150	°C
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 _{θJC}	Thermal Resistance,Junction to Case	-	0.65	°C/W
R _{θJA}	Thermal Resistance,Junction to Ambient	-	62.5	



HCS100N15D150V N-Channel MOSFET

Electrical Characteristics (Ta=25°C unless otherwise noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	150	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25°C)	$V_{DS}=150V, V_{GS}=0V$	--	--	1	μA
	Zero Gate Voltage Drain Current(Tc=125°C)	$V_{DS}=150V, V_{GS}=0V$	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$	--	--	± 100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	4.0	5.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance ^③	$V_{GS}=12V, I_D=30A$	--	11.0	12.5	m Ω
$R_{DS(ON)}$	Drain-Source On-State Resistance ^③	$V_{GS}=10V, I_D=30A$	--	11.2	13.0	m Ω
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	$V_{DD}=75V,$ $I_D=10A,$ $R_G=6.8\Omega,$ $V_{GS}=10V$	--	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	$T_J=25^\circ C, I_{SD}=20A,$ $V_{GS}=0V$ $di/dt=300A/\mu s$	--	50	--	nS
Q_{rr}	Reverse Recovery Charge				105	

NOTE:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Limited by T_{Jmax} , starting $T_J = 25^\circ C$, $L = 0.5mH, R_G = 25\Omega, I_{AS} = 30A, V_{GS} = 10V$. Part not recommended for use above this value
- ③ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.



Typical Characteristics

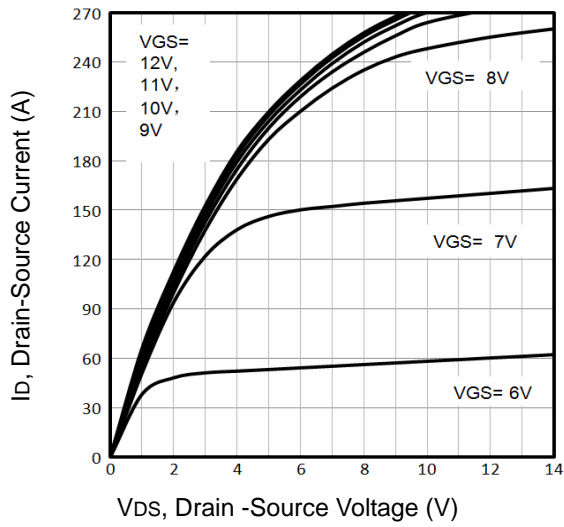


Fig1. Typical Output Characteristics

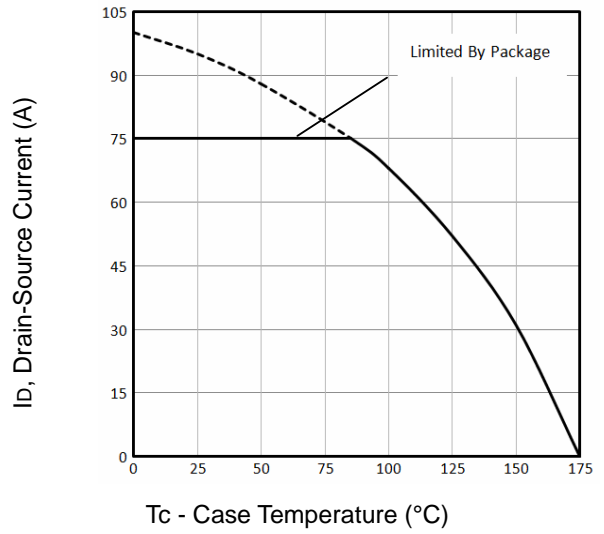


Fig2. Maximum Drain Current Vs Case Temperature

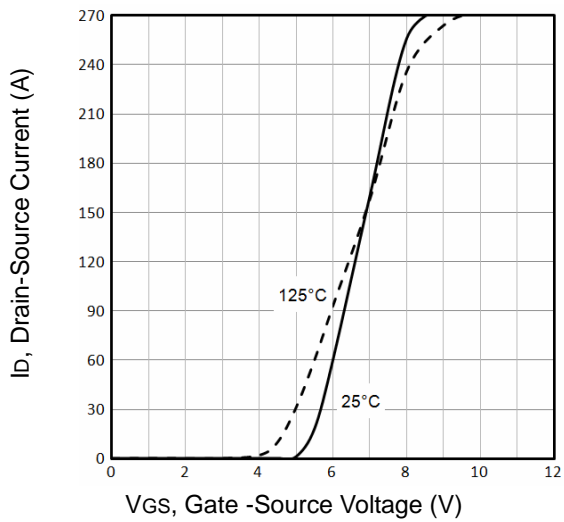


Fig3. Typical Transfer Characteristics

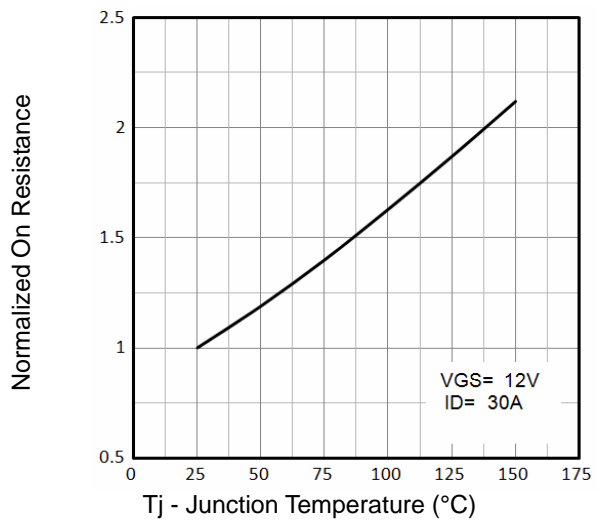


Fig4. Normalized On-Resistance Vs. Temperature

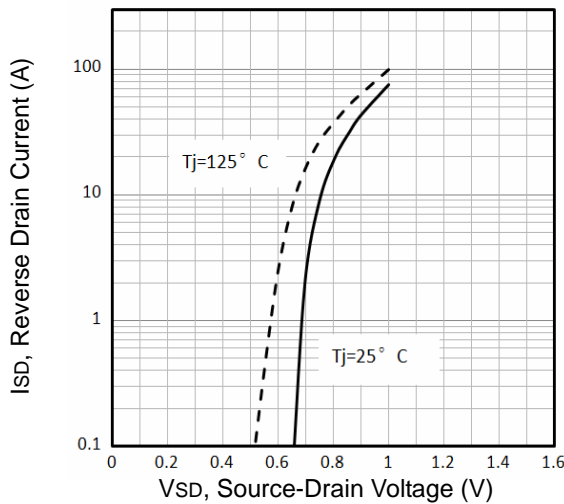


Fig5. Typical Source-Drain Diode Forward Voltage

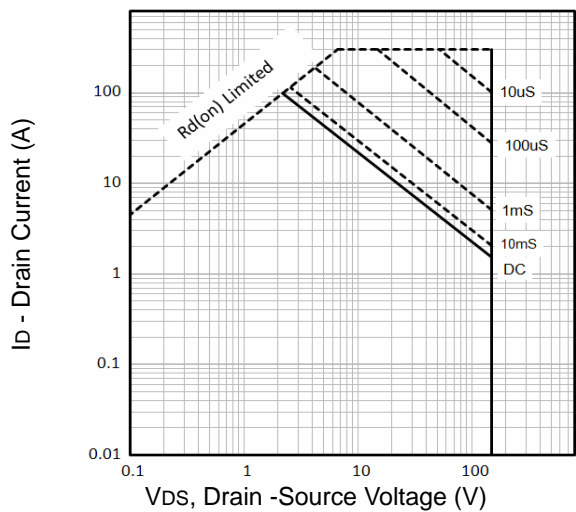


Fig6. Maximum Safe Operating Area



Typical Characteristics

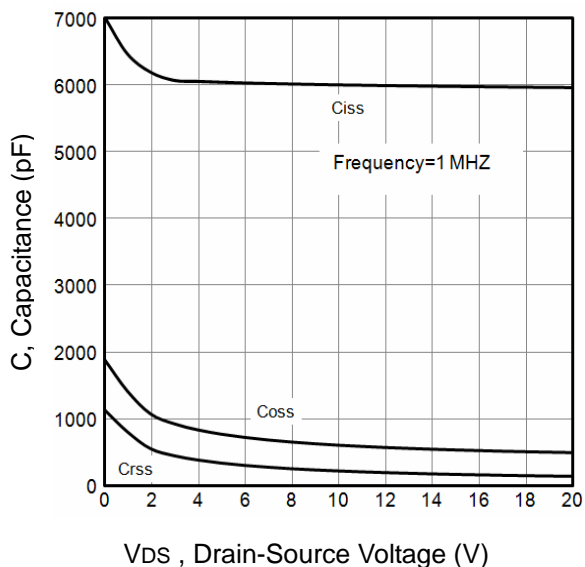


Fig7. Typical Capacitance Vs. Drain-Source Voltage

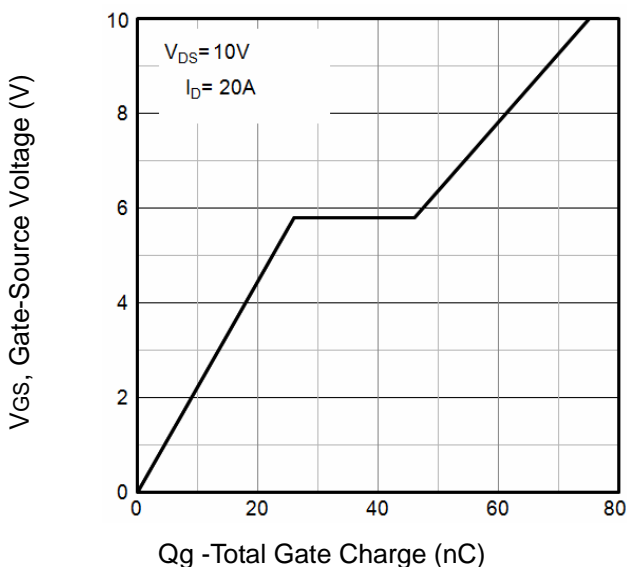


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

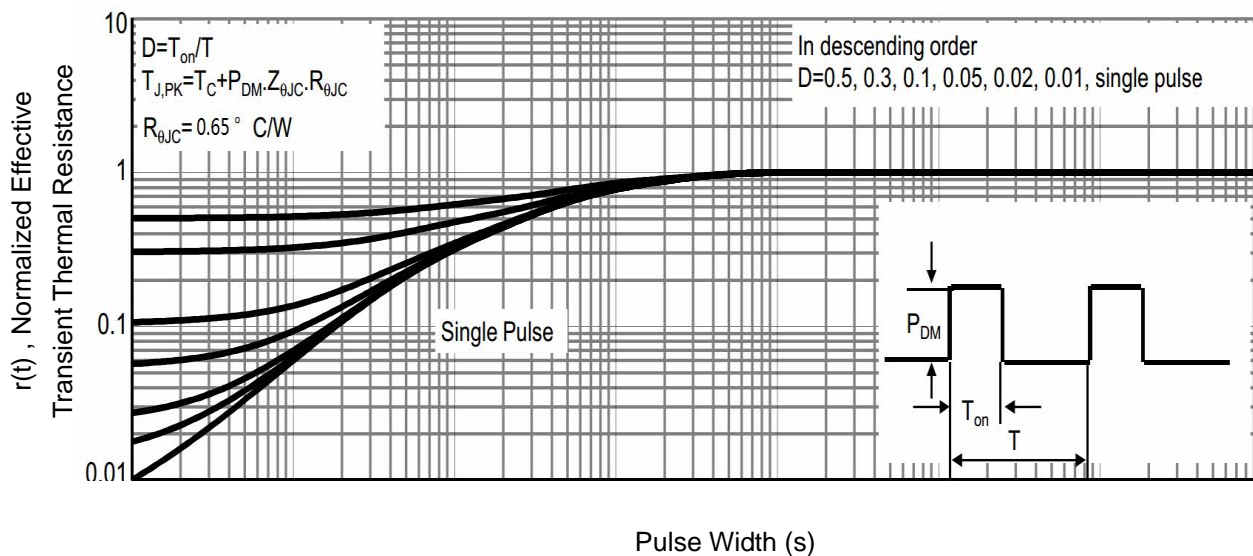


Fig9. Normalized Maximum Transient Thermal Impedance

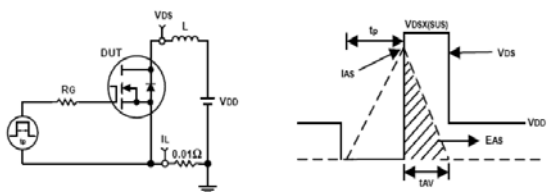


Fig10. Unclamped Inductive Test Circuit and waveforms

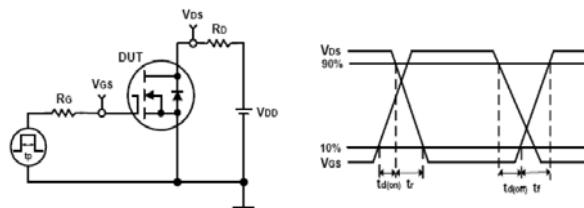


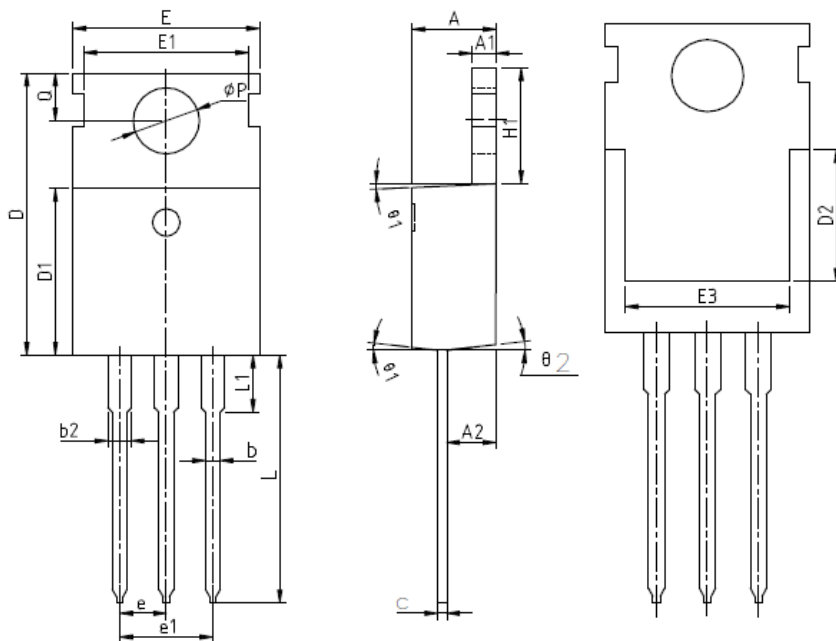
Fig11. Switching Time Test Circuit and waveforms



HCS100N15D150V N-Channel MOSFET

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°