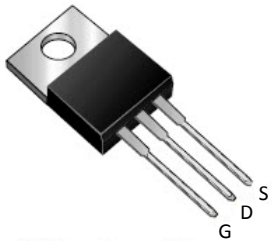
H5NK80

800V N-channel MOSFET

Features

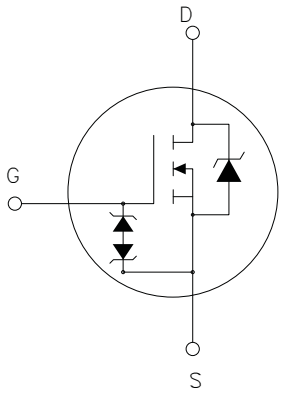
- 100% avalanche tested
- Gate charge minimized
- Very low intrinsic capacitances
- Very good manufacturing repeatibility



TO-220

Applications

- Switching application



Absolute maximum ratings (T_{CASE} = 25 °C unless otherwise specified)

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Drain-Source Voltage	V_{DS}	800	V
Drain Current –continuous @25°C	I_D	5	A
Drain Current –continuous @100°C	I_D	3	A
Pulsed Drain Current[1]	I_{DM}	20	A
Gate-Source Voltage	V_{GS}	±30	V
Single Pulse Avalanche[2]	E_{AS}	125	mJ
Pulsed Avalanche Rating[2]	I_{AS}	5	A
Operating Junction & Storage Temperature	T_j, T_{stg}	-55 to 150	°C
Lead Temperature ($^1/_{16}$" from case for 10sec.)	T_L	260	°C

Note: 1. Pulse width limited by maximum junction temperature.

2. V_{DD} = 50V, V_{DS} = 800V, R_G = 25 Ω, T_J: 25°C

Electrical characteristics (T_{CASE} = 25 °C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	800			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±10	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 800V, V_{GS} = 0V			1	μA
		V_{DS} = 800V, V_{GS} = 0V, T_J =150°C			10	
On-State Drain Current	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 2.5A		2	2.4	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		190		pF
Output Capacitance	C_{oss}			12.5		
Reverse Transfer Capacitance	C_{rss}			2.7		
Total Gate Charge	Q_g	V_{DD} = 640V, I_D = 2.5A, V_{GS} = 10V		5		nC
Gate-Source Charge	Q_{gs}			1.1		
Gate-Drain Charge	Q_{gd}			2.1		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{(on)}$	V_{GS} = 10V, V_{DD} = 400V, I_D = 2A, R_{GEN} = 4.7Ω,		19		ns
Rise Time	t_r			26		
Turn-Off Delay Time	$t_{(off)}$			46		
Fall Time	t_f			31		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				5	A
Forward Voltage	V_{SD}	I_F =Is, V_{GS} = 0V			1.5	V

Typical Characteristic Curves

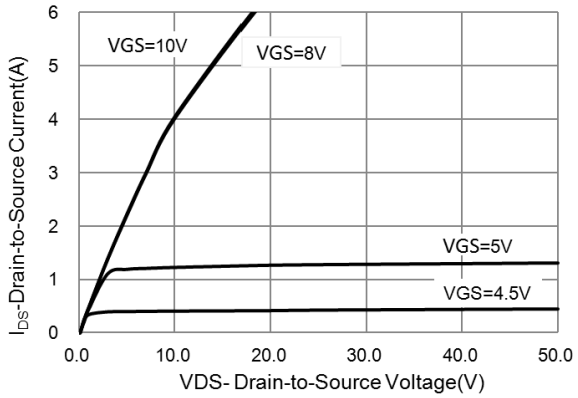


Fig.1 Output Characteristics

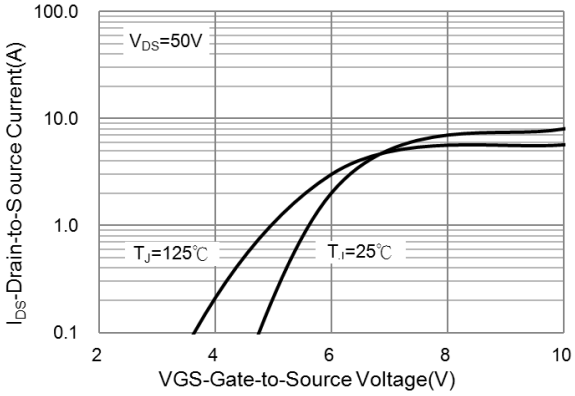


Fig.2 Transfer Characteristics

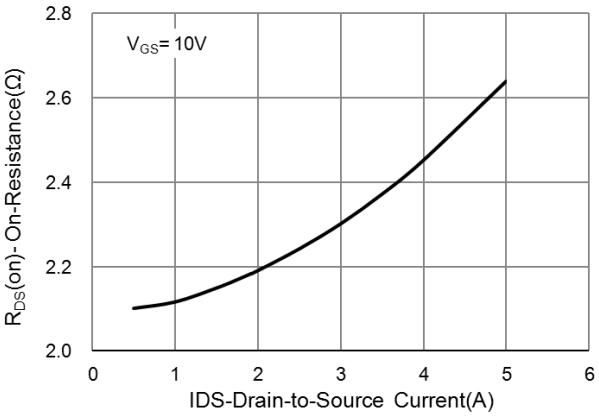


Fig.3 On-Resistance vs. Drain Current

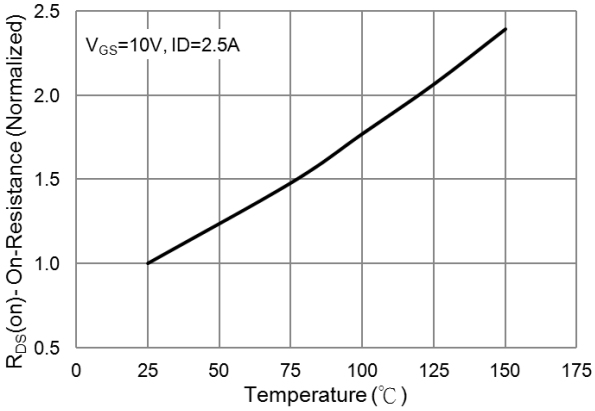


Fig.4 On-Resistsnce vs. Junction temperature

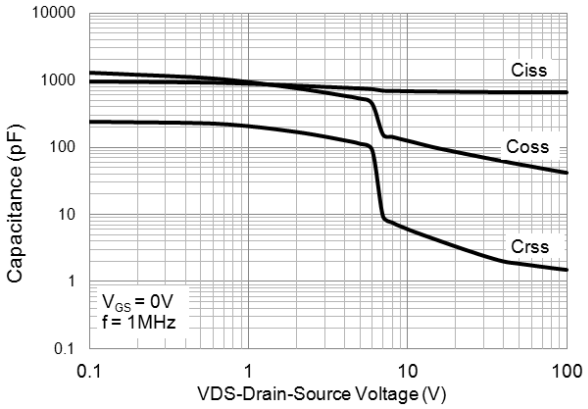


Fig.5 Capacitance vs. Drain-Source Voltage

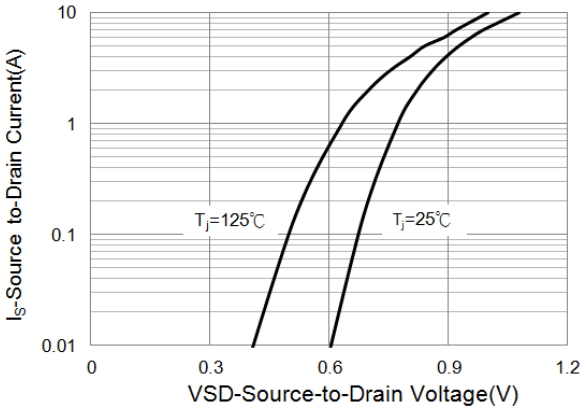


Fig.6 Body Dlode CharacterIslcs

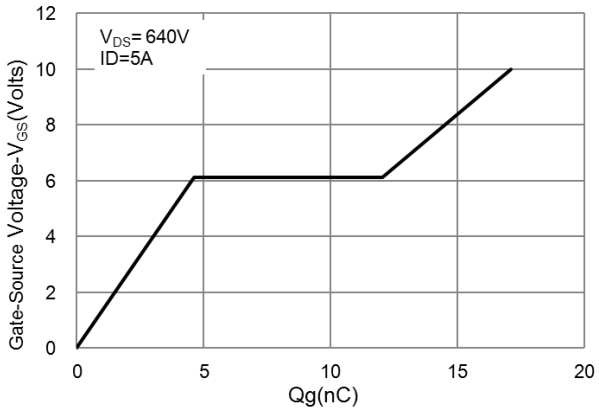


Fig.7 Gate-Charge Characteristics

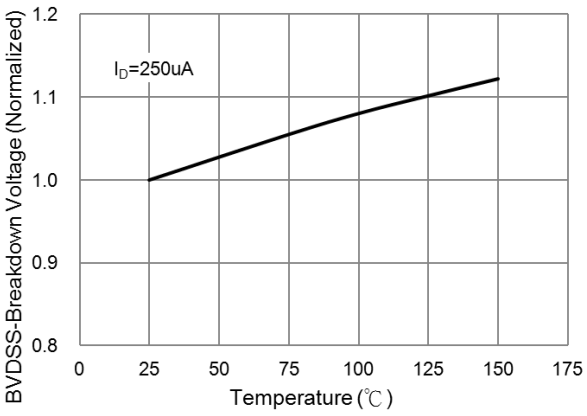


Fig.8 Breakdown Voltage Variation vs.Temperature

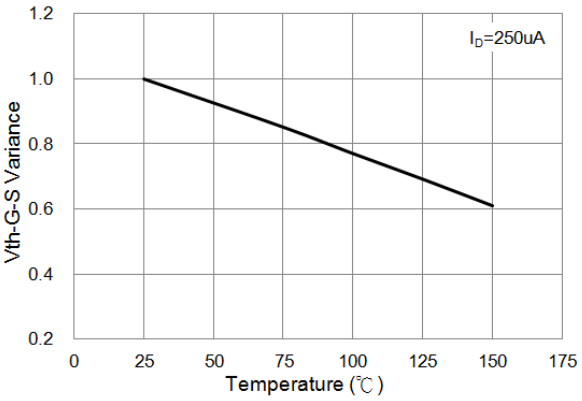


Fig.9 Threshold Voltage Variation with Temperature

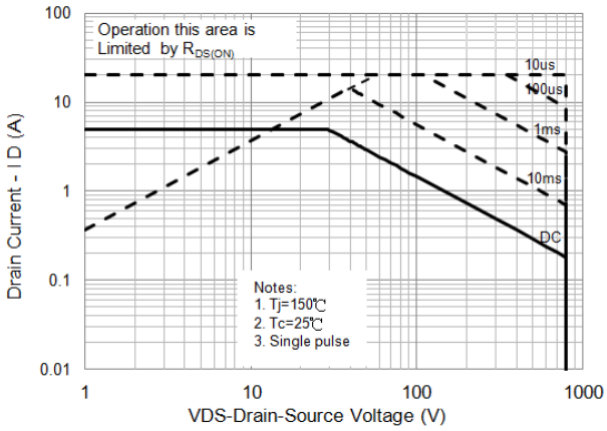


Fig.10 Maximum Safe Operating Area

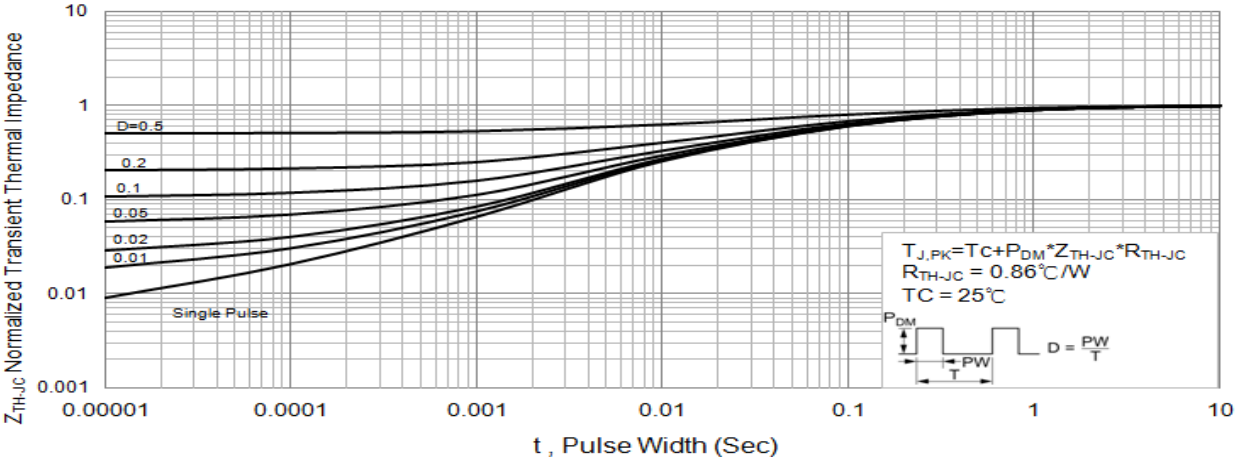
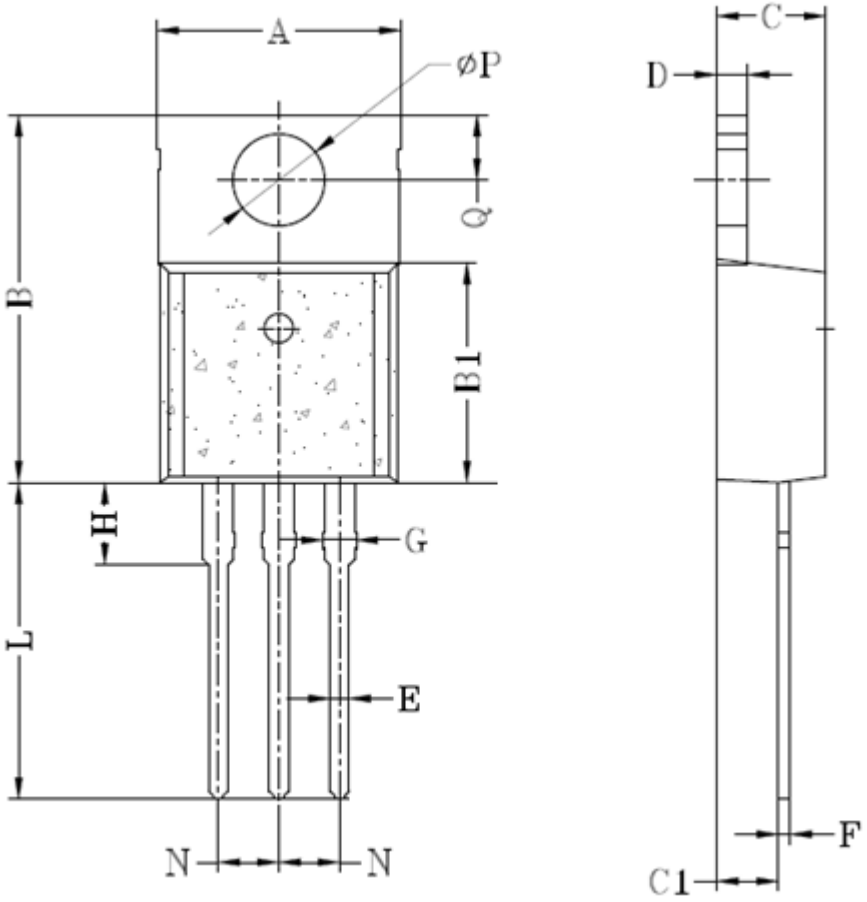


Fig.11 Normalized Transient Thermal Impedance vs. Pulse Width

Package mechanical data



Symbol	unit(mm)	
	MIN	MAX
A	10.0	10.4
B	15.2	15.6
B1	9.00	9.60
C	4.47	4.67
C1	2.28	2.88
D	1.20	1.40
E	0.70	0.90
F	0.40	0.60
G	1.27	1.47
H	3.20	3.70
L	12.95	13.55
N	2.34	2.74
Q	2.44	3.04
ΦP	3.74	3.94

TO-220