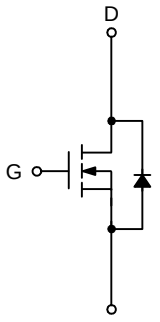
F N K
Semiconductor

30H80/30H80A

N-Channel Enhancement Mode MOSFET

Features

- 30H80 (TO-220) / 30H80A (TO-262)
- 30V/80A,
  $R_{DS(ON)}$=7.5mΩ (max) @ V_{GS}=10V
  $R_{DS(ON)}$=10 mΩ (max) @ V_{GS}=4.5V
- Super High Dense Cell Design
- Reliable and Rugged
- Avalanche Rated
- Lead Free and Green Devices Available
  (RoHS Compliant)



N-Channel MOSFET

Applications

- Power Management in Desktop Computer or DC/DC Converters.

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current		80	A
I_{DP}	300μs Pulse Drain Current Tested	T_C=25°C	160	A
		T_C=100°C	90	
I_D	Continuous Drain Current	T_C=25°C	80*	A
		T_C=100°C	48	
P_D	Maximum Power Dissipation	T_C=25°C	50	W
		T_C=100°C	20	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		2.5	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		50	°C/W
E_{AS}	Drain-Source Avalanche Energy, L=0.5mH		225	mJ

Note：* Current limited by bond wire.

Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	30H80(A)			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.0	1.4	1.7	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [a]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=40A	-	5.5	7.5	mΩ
		V_{GS}=4.5V, I_{DS}=20A	-	7.2	10	
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	I_{SD}=40A, V_{GS}=0V	-	0.85	1.1	V
t_{rr}	Reverse Recovery Time	I_{DS}=40A, dI_{SD}/dt=100A/μs	-	25	-	ns
Qrr	Reverse Recovery Charge		-	10	-	nC

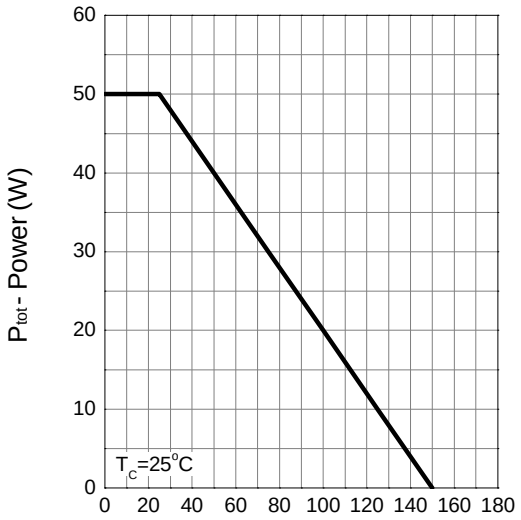
Electrical Characteristics (Cont.) (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	30H80(A)			Unit
			Min.	Typ.	Max.	
Dynamic Characteristics [b]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1.6	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz	-	2000	2800	pF
C_{oss}	Output Capacitance		-	400	-	
C_{rss}	Reverse Transfer Capacitance		-	320	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, R_L=15Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	14	26	ns
t_r	Turn-on Rise Time		-	12	23	
$t_{d(OFF)}$	Turn-off Delay Time		-	49	89	
t_f	Turn-off Fall Time		-	21	39	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=4.5V, I_{DS}=40A	-	22.5	32	nC
Q_{gs}	Gate-Source Charge		-	5.6	-	
Q_{gd}	Gate-Drain Charge		-	13	-	

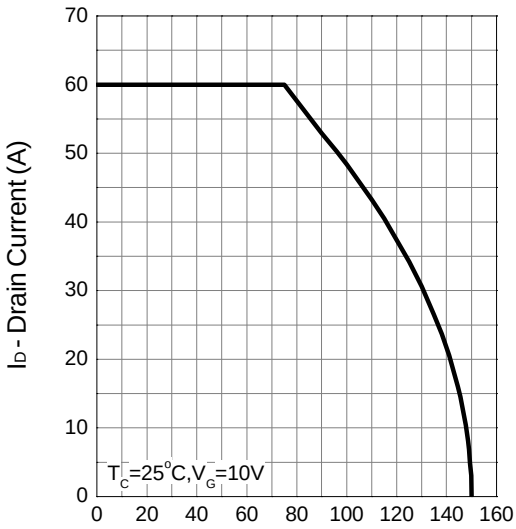
Note a : Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note b : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

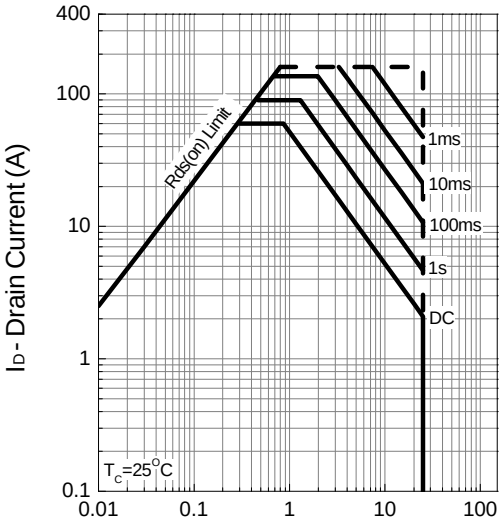
Power Dissipation



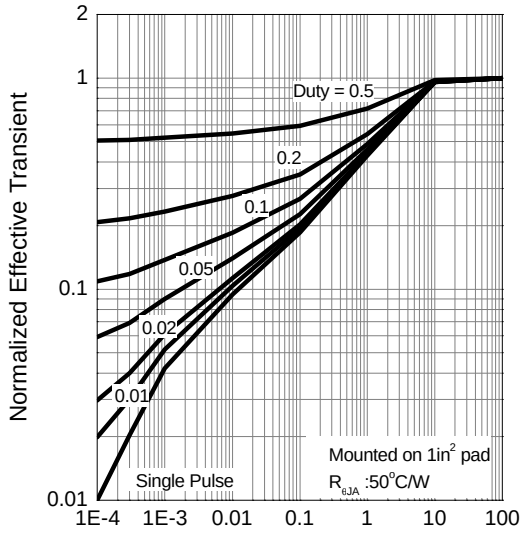
Drain Current



Safe Operation Area

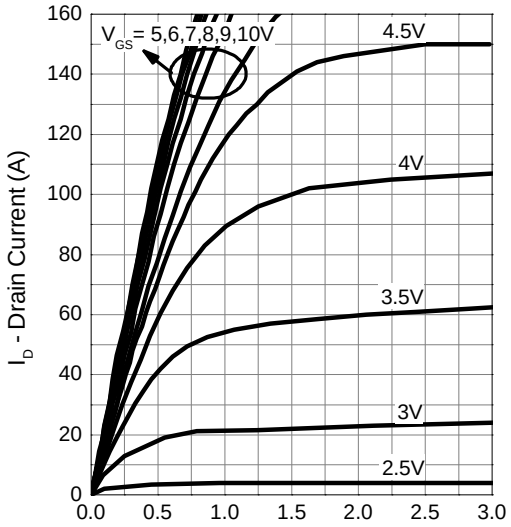


Thermal Transient Impedance

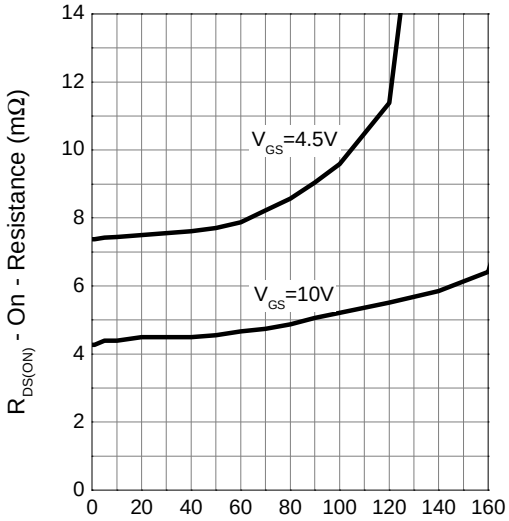


Typical Operating Characteristics (Cont.)

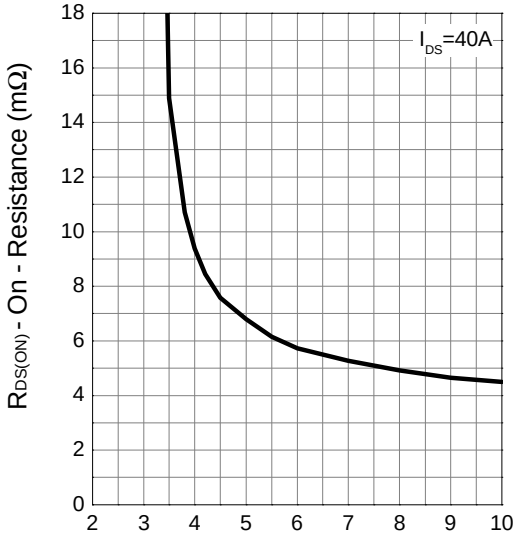
Output Characteristics



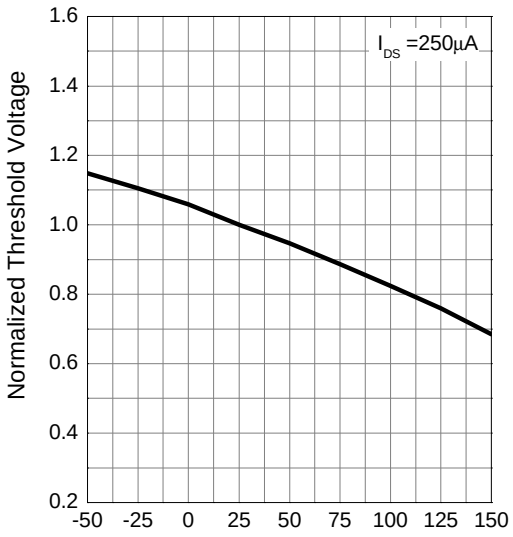
Drain-Source On Resistance



Gate-Source On Resistance

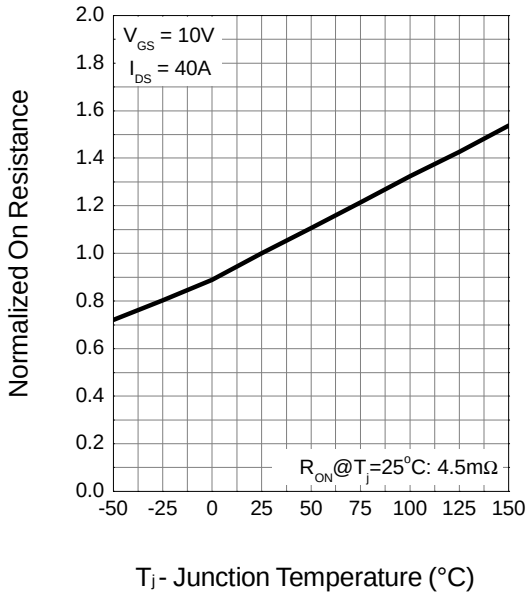


Gate Threshold Voltage

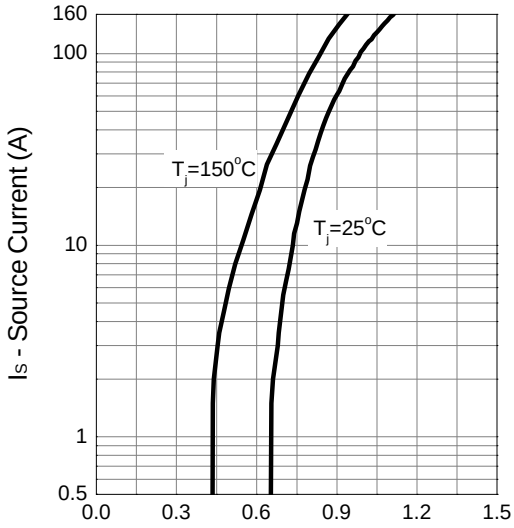


Typical Operating Characteristics (Cont.)

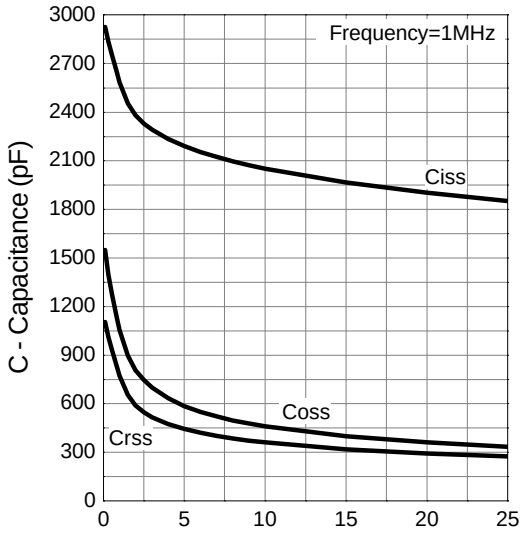
Drain-Source On Resistance



Source-Drain Diode Forward



Capacitance



Gate Charge