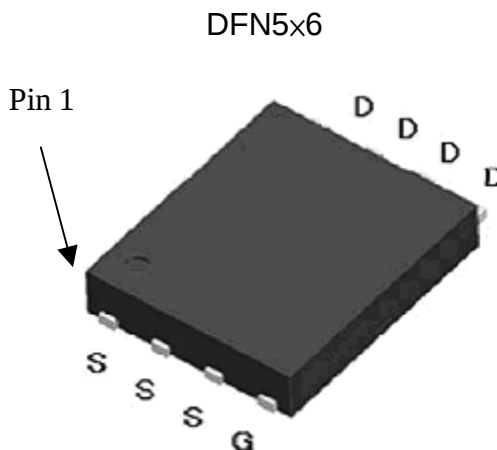


N-Channel Enhancement Mode Power MOSFET

Features:

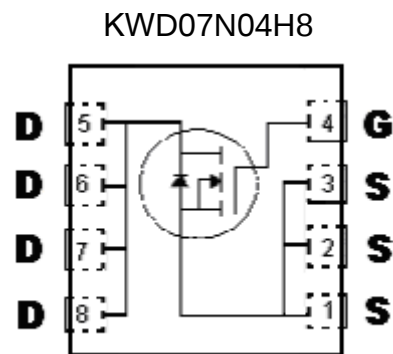
- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- Pb-free lead plating and Halogen-free package

Outline



BV_{DSS}	40V
I_D@V_{GS}=10V, T_C=25°C	67A
I_D@V_{GS}=10V, T_C=100°C	42.4A
I_D@V_{GS}=10V, T_A=25°C	14A
I_D@V_{GS}=10V, T_A=70°C	11.2A
R_{DS(ON)}@V_{GS}=10V, I_D=11A	4.7mΩ (typ)
R_{DS(ON)}@V_{GS}=4.5V, I_D=9A	8.0mΩ (typ)

Symbol



G : Gate D : Drain S : Source

Ordering Information

Device	Package	Shipping
KWD07N04H8	DFN 5 x6 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

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

Parameter		Symbol	Limits	Unit
Drain-Source Voltage (Note 1)		V _{DS}	40	V
Gate-Source Voltage		V _{GS}	±20	
Continuous Drain Current @T _C =25°C, V _{GS} =10V (Note 1)		I _D	67	A
Continuous Drain Current @T _C =100°C, V _{GS} =10V (Note 1)			42.4	
Continuous Drain Current @T _A =25°C, V _{GS} =10V (Note 2)		I _{DSM}	14	
Continuous Drain Current @T _A =70°C, V _{GS} =10V (Note 2)			11.2	
Pulsed Drain Current @ V _{GS} =10V (Note 3)		I _{DM}	200	
Avalanche Current (Note 3)		I _{AS}	20	
Single Pulse Avalanche Energy @ L=0.5mH, I _D =20Amps, V _{DD} =50V (Note 2)		E _{AS}	100	mJ
Repetitive Avalanche Energy (Note 3)		E _{AR}	5.7	
Power Dissipation	T _C =25°C (Note 1)	P _D	57	W
	T _C =100°C (Note 1)		36.5	
	T _A =25°C (Note 2)	P _{DSM}	2.5	
	T _A =70°C (Note 2)		1.6	
Operating Junction and Storage Temperature		T _j , T _{stg}	-55~+150	°C

*Drain current limited by maximum junction temperature

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	2.2	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 4)	R _{θJA}	50	°C/W

Note : 1. The power dissipation P_D is based on T_{J(MAX)}=150 °C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

2. The value of R_{θJA} is measured with the device mounted on 1 in²FR-4 board with 2 oz. copper, in a still air environment with T_A=25 °C. The value in any given application depends on the user's specific board design. The power dissipation P_{DSM} is based on R_{θJA} and the maximum allowed junction temperature of 150 °C.

3. Ratings are based on low frequency and low duty cycles to keep initial T_J=25 °C.

4. When mounted on 1 in² copper pad of FR-4 board, t≤10s; 125°C/W when mounted on minimum copper pad.

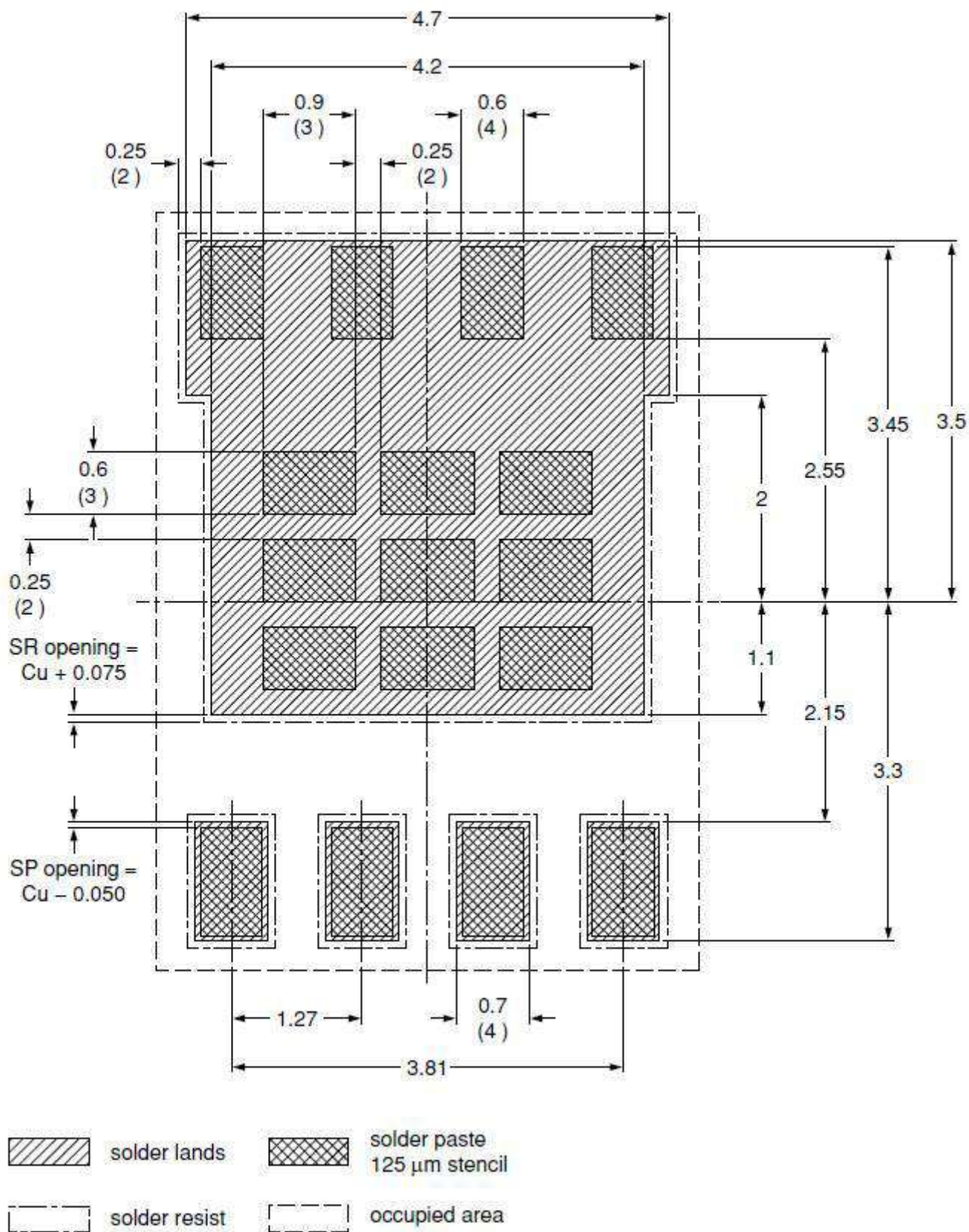
Characteristics (T_J=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	40	-	-	V	V _{GS} =0V, I _D =250μA
ΔBV _{DSS} /ΔT _J	-	0.03	-	V/°C	Reference to 25°C, I _D =250μA
V _{GS(th)}	1.5	-	2.5	V	V _{DS} = V _{GS} , I _D =250μA
*G _{FS}	-	24	-	S	V _{DS} =5V, I _D =11A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V
I _{DSS}	-	-	1	μA	V _{DS} =40V, V _{GS} =0V
	-	-	25		V _{DS} =40V, V _{GS} =0V, T _J =125°C

*R _{DS(ON)}	-	4.7	6	mΩ	V _{GS} =10V, I _D =11A
	-	8	11		V _{GS} =4.5V, I _D =9A
Dynamic					
*Q _g	-	30.2	45	nC	V _{DS} =20V, I _D =16A, V _{GS} =10V
*Q _{gs}	-	6.5	-		
*Q _{gd}	-	7.0	-		
*t _{d(ON)}	-	15.6	24	ns	V _{DS} =20V, I _D =1A, V _{GS} =10V, R _G =6Ω
*t _r	-	19.6	30		
*t _{d(OFF)}	-	49.6	75		
*t _f	-	12.4	19		
C _{iss}	-	1514	1895	pF	V _{GS} =0V, V _{DS} =20V, f=1MHz
C _{oss}	-	188	235		
C _{rss}	-	119	150		
R _g	-	1.7	-	Ω	f=1MHz
Source-Drain Diode					
*I _S	-	-	67	A	
*I _{SM}	-	-	200		
*V _{SD}	-	0.81	1.1	V	I _S =10A, V _{GS} =0V
*t _{rr}	-	12	-	ns	V _{GS} =0, I _F =10A, dI/dt=100A/μs
*Q _{rr}	-	6.5	-	nC	

*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

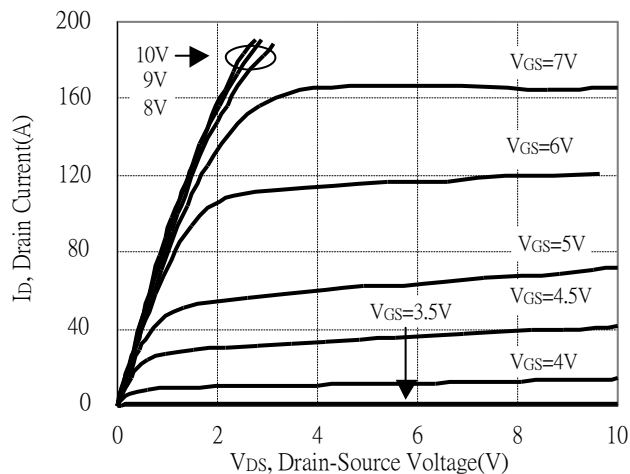
Recommended Soldering Footprint & Stencil Design



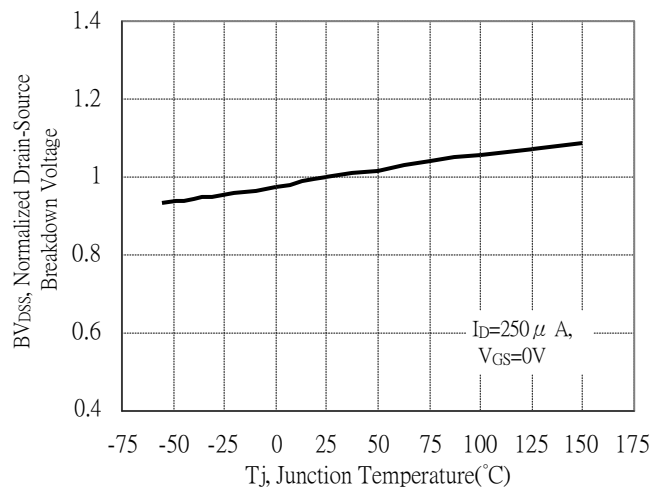
unit : mm

Typical Characteristics

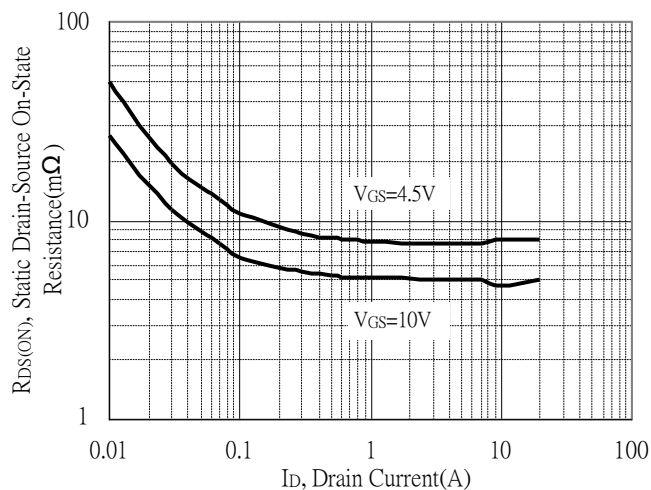
Typical Output Characteristics



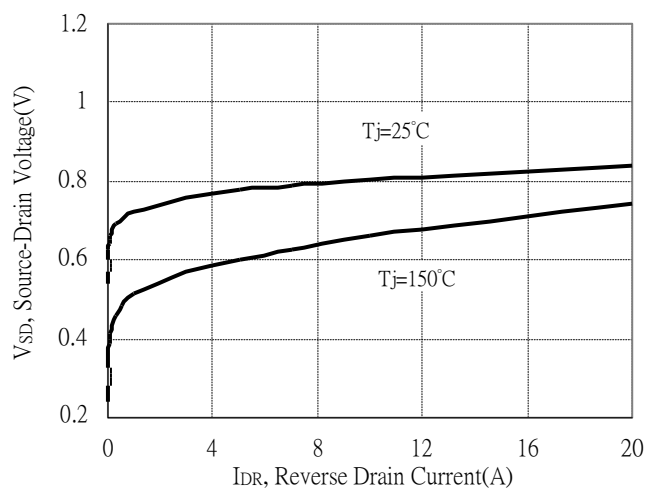
Breakdown Voltage vs Ambient Temperature



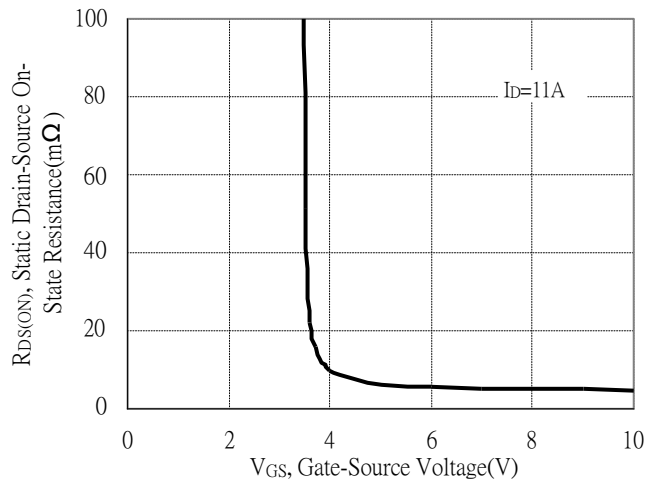
Static Drain-Source On-State resistance vs Drain Current



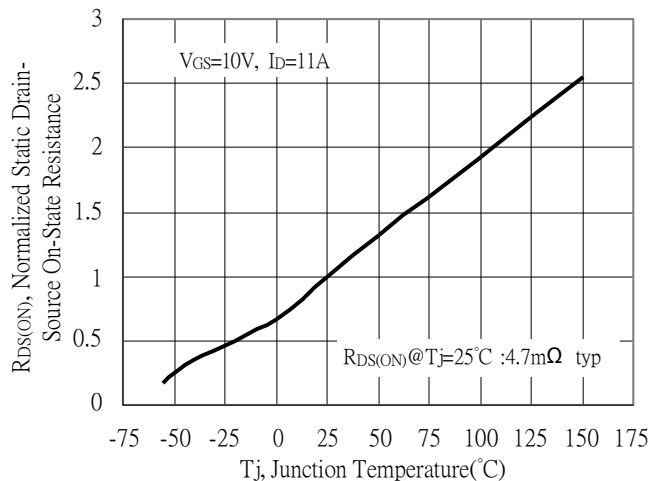
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

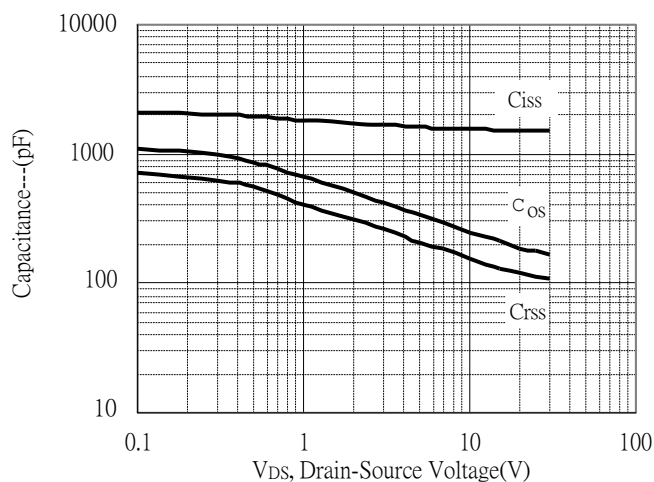


Drain-Source On-State Resistance vs Junction Temperature

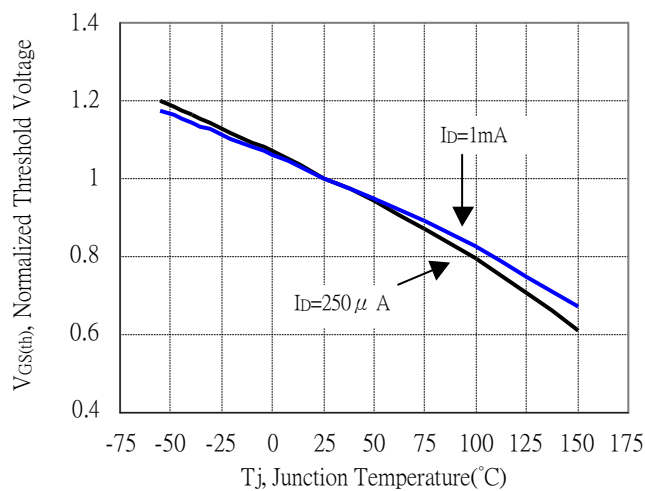


Typical Characteristics(Cont.)

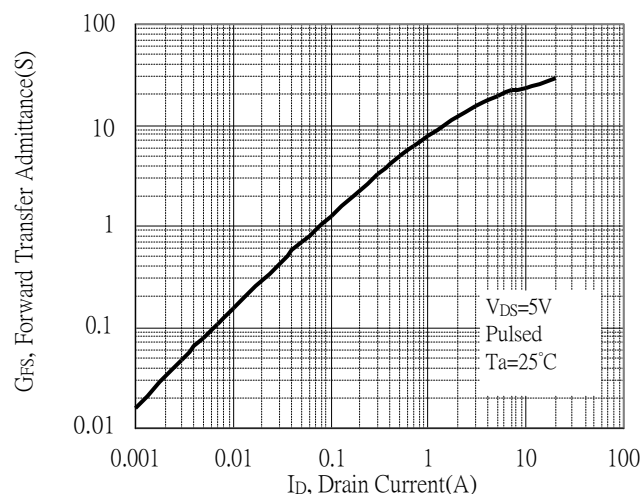
Capacitance vs Drain-to-Source Voltage



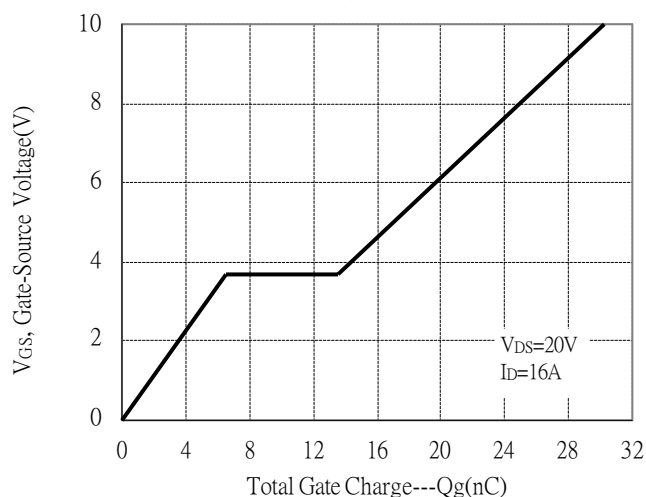
Normalized Threshold Voltage vs Junction Temperature



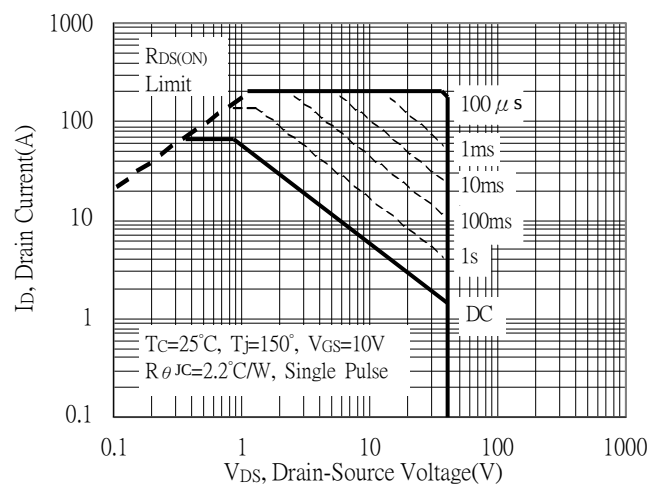
Forward Transfer Admittance vs Drain Current



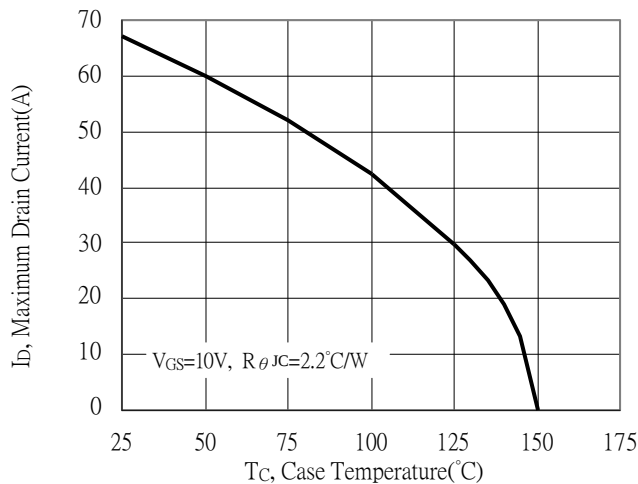
Gate Charge Characteristics



Maximum Safe Operating Area

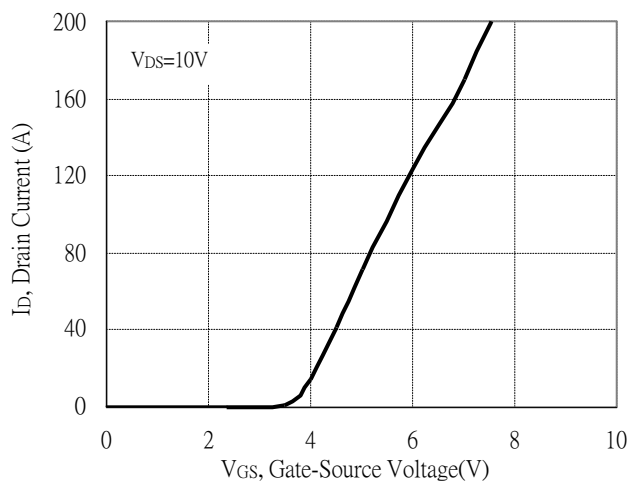


Maximum Drain Current vs Case Temperature

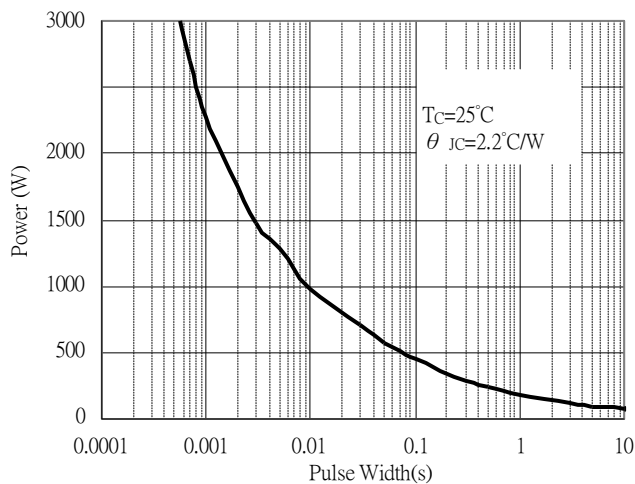


Typical Characteristics(Cont.)

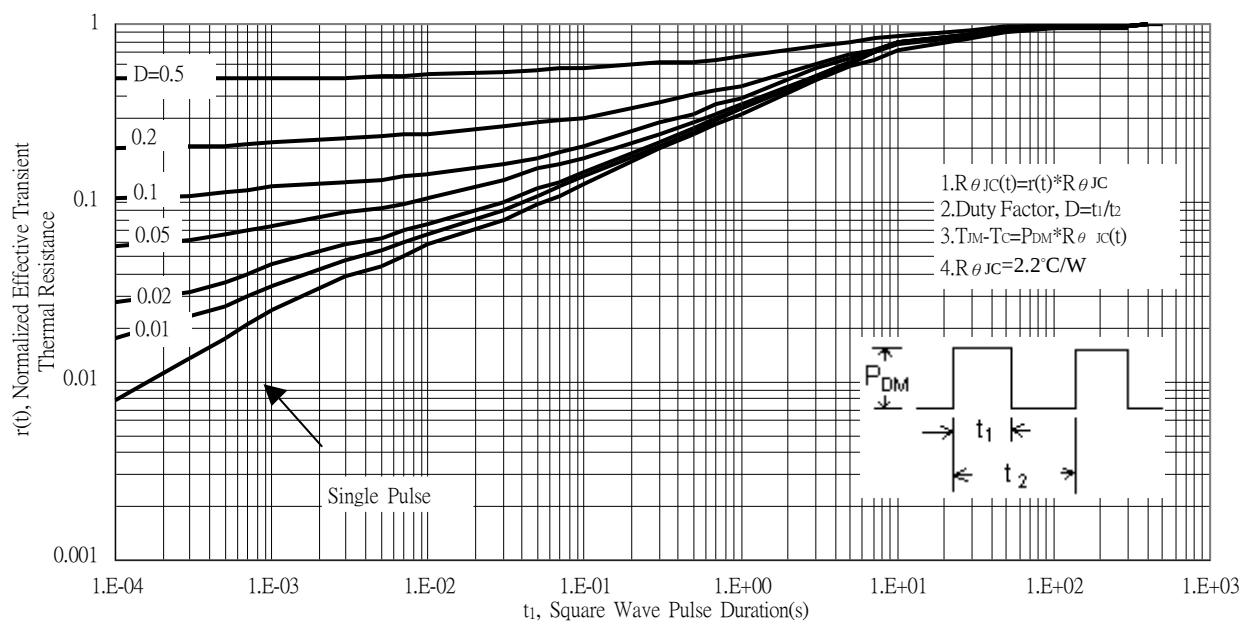
Typical Transfer Characteristics



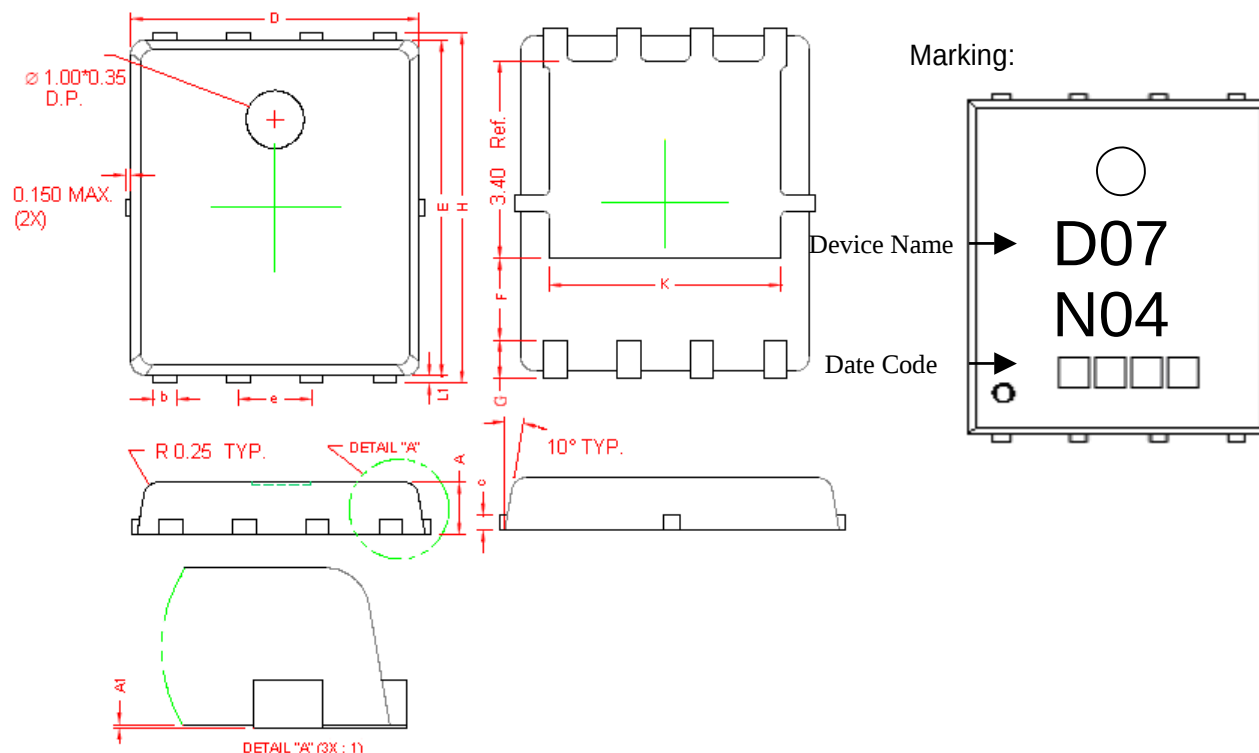
Single Pulse Maximum Power Dissipation



Transient Thermal Response Curves



DFN5x6 Dimension



Date Code Rule : Year code + Month code+Serial Number

Year Code : The last digit of Christian Year

Month Code : Jan→A, Feb→B, Mar→C, Apr→D, May→E, Jun→F, Jul→G, Aug→H, Sep→J, Oct→K, Nov→L, Dec→M

Serial Number : Production serial lot number, 01~99

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.80	1.00	0.031	0.039	E	5.70	5.90	0.224	0.232
A1	0.00	0.05	0.000	0.002	e	1.27	BSC	0.050	BSC
b	0.35	0.49	0.014	0.019	H	5.95	6.20	0.234	0.244
c	0.254	REF	0.010	REF	L1	0.10	0.18	0.004	0.007
D	4.90	5.10	0.193	0.201	G	0.60	REF	0.024	REF
F	1.40	REF	0.055	REF	K	4.00	REF	0.157	REF