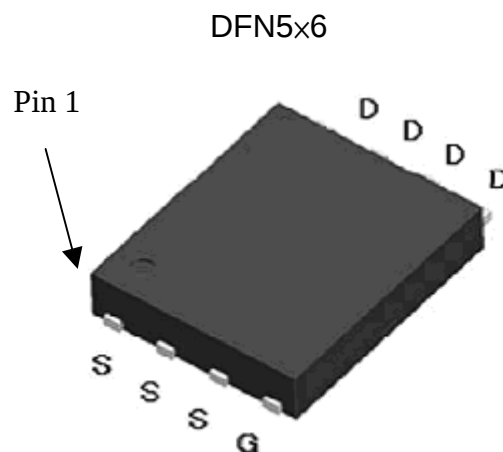


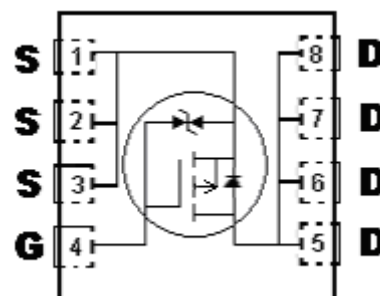
P-Channel Enhancement Mode Power MOSFET

Features:

- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- ESD protected gate
- RoHS compliant package



BV_{DSS}	-60V
I_D@V_{GS}=10V, T_C=25°C	-34A
I_D@V_{GS}=10V, T_A=25°C	-5.9A
R_{DS(ON)}@V_{GS}=-10V, I_D=-6A	21.4 mΩ (typ)
R_{DS(ON)}@V_{GS}=-4.5V, I_D=-4A	35.6 mΩ (typ)
R_{DS(ON)}@V_{GS}=-4V, I_D=-3A	42.6 mΩ (typ)



G : Gate D : Drain S : Source

Ordering Information

Device	Package	Shipping
KPRB030P06K	DFN 5 × 6 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (T_C=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage (Note 1)		V _{DS}	-60	V
Gate-Source Voltage		V _{GS}	±20	
Continuous Drain Current @T _C =25°C, V _{GS} =-10V (Note 5)		I _D	-34*	A
Continuous Drain Current @T _C =100°C, V _{GS} =-10V (Note 5)			-24*	
Continuous Drain Current @T _A =25°C, V _{GS} =-10V (Note 2)		I _{DSM}	-5.9	
Continuous Drain Current @T _A =70°C, V _{GS} =-10V (Note 2)			-4.7	
Pulsed Drain Current (Note 3)		I _{DM}	-110*	
Avalanche Current (Note 3)		I _{AS}	-24	
Single Pulse Avalanche Energy @ L=0.5mH, I _D =-24 Amps, V _{DD} =-15V (Note 4)		E _{AS}	144	mJ
Repetitive Avalanche Energy (Note 3)		E _{AR}	7.5	
Power Dissipation	T _C =25°C (Note 1)	P _D	75	W
	T _C =100°C (Note 1)		37.5	
	T _A =25°C (Note 2)	P _{DSM}	2	
	T _A =70°C (Note 2)		1.3	
Operating Junction and Storage Temperature		T _j , T _{stg}	-55~+175	

*Drain current limited by maximum junction temperature

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	2	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 2)	R _{θJA}	62	

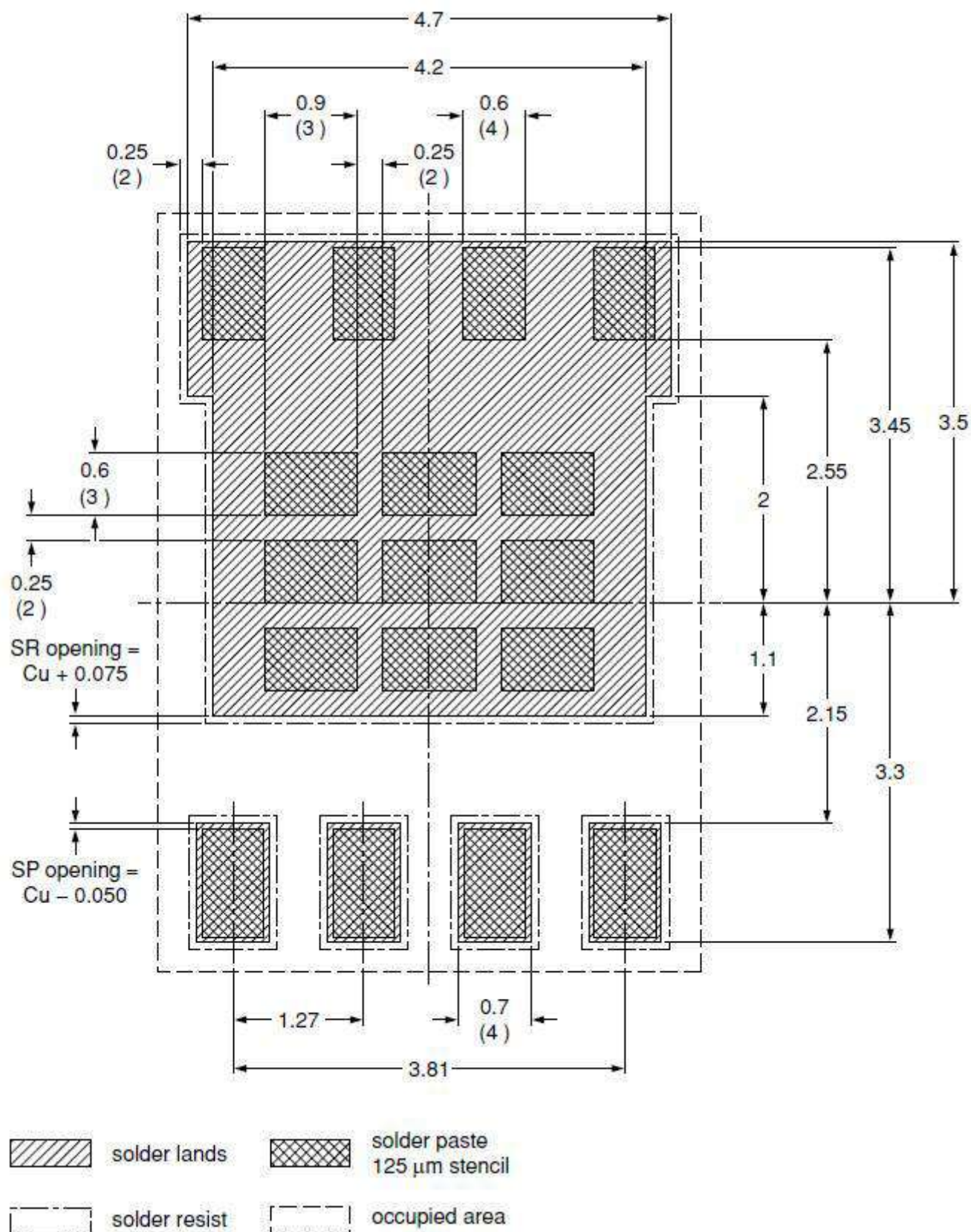
- Note : 1. The power dissipation P_D is based on T_{J(MAX)}=175 °C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
2. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 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, and the maximum temperature of 175°C may be used if the PCB allows it.
3. Pulse width limited by junction temperature T_{J(MAX)}=175°C.
4. Ratings are based on low frequency and low duty cycles to keep initial T_J=25 °C. 100% tested by conditions of V_{DD}=-15V, I_D=-12A, L=0.5mH, V_{GS}=-10V.
5. Calculated continuous drain current based on maximum allowable junction temperature.
6. The static characteristics are obtained using <300μs pulses, duty cycle 0.5% maximum.
7. The R_{θJA} is the sum of thermal resistance from junction to case R_{θJC} and case to ambient.

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	-60	-	-	V	V _{GS} =0V, I _D =-250μA
ΔBV _{DSS} /ΔT _j	-	-36	-	mV/°C	Reference to 25°C, I _D =-250μA
V _{GS(th)}	-1	-	-2.5	V	V _{DS} =-10V, I _D =-1mA
*G _{FS}	-	17.3	-	S	V _{DS} =-5V, I _D =-10A
I _{GSS}	-	-	±10	μA	V _{GS} =±16V
I _{DSS}	-	-	1		V _{DS} =-60V, V _{GS} =0V
	-	-	5		V _{DS} =-48V, V _{GS} =0V, T _j =55°C
*R _{DS(ON)}	-	21.4	28	mΩ	V _{GS} =-10V, I _D =-6A
	-	35.6	47		V _{GS} =-4.5V, I _D =-4A
	-	42.6	56		V _{GS} =-4V, I _D =-3A
Dynamic					
*Q _g	-	28.5	-	nC	V _{DD} =-48V, I _D =-6A, V _{GS} =-10V
*Q _{gs}	-	4.9	-		
*Q _{gd}	-	8.4	-		
*t _{d(ON)}	-	14	-	ns	V _{DD} =-30V, I _D =-1A, V _{GS} =-10V, R _G =6Ω
*t _r	-	18.8	-		
*t _{d(OFF)}	-	68.2	-		
*t _f	-	66.2	-		
C _{iSS}	-	1453	-	pF	V _{GS} =0V, V _{DS} =-20V, f=1MHz
C _{oSS}	-	218	-		
C _{rSS}	-	120	-		
Source-Drain Diode					
*I _S	-	-	-34	A	
*I _{SM}	-	-	-110		
*V _{SD}	-	-0.78	-1.2	V	I _S =-6A, V _{GS} =0V
*t _{rr}	-	15	-	ns	V _{GS} =0V, I _F =-6A, dI _F /dt=100A/μs
*Q _{rr}	-	8	-	nC	

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

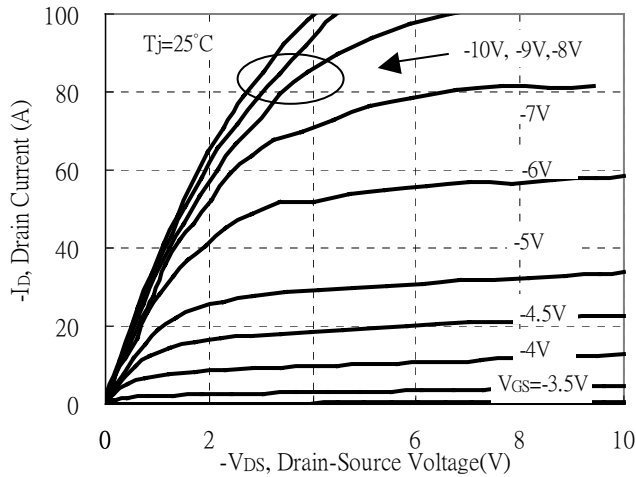
Recommended Soldering Footprint & Stencil Design



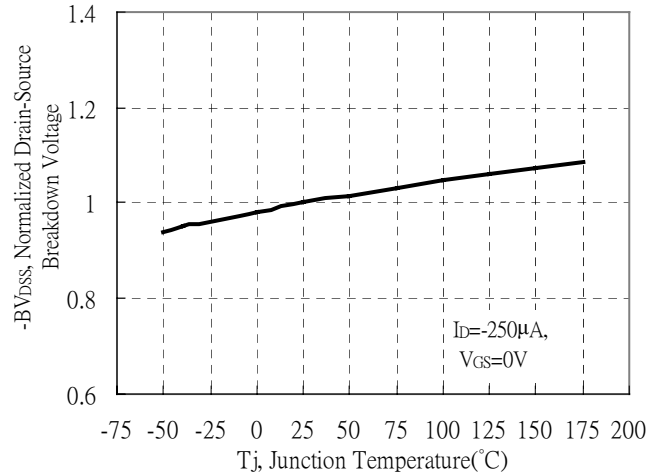
unit : mm

Typical Characteristics

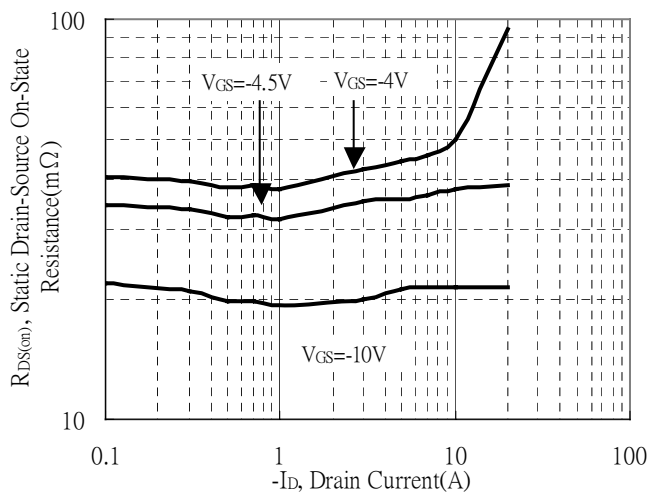
Typical Output Characteristics



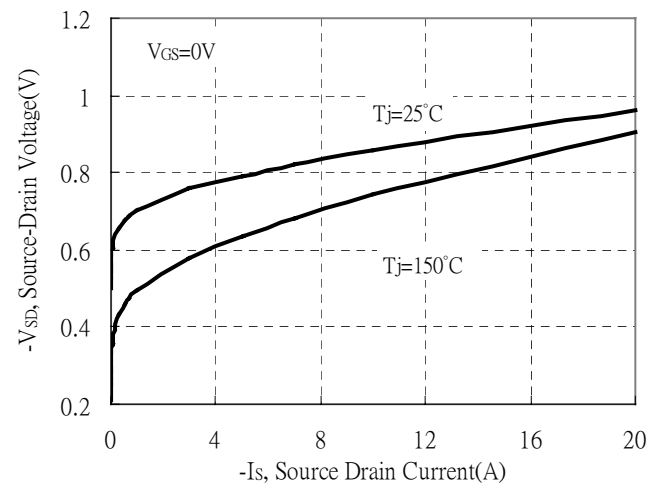
Normalized Brekdown Voltage vs Ambient Temperature



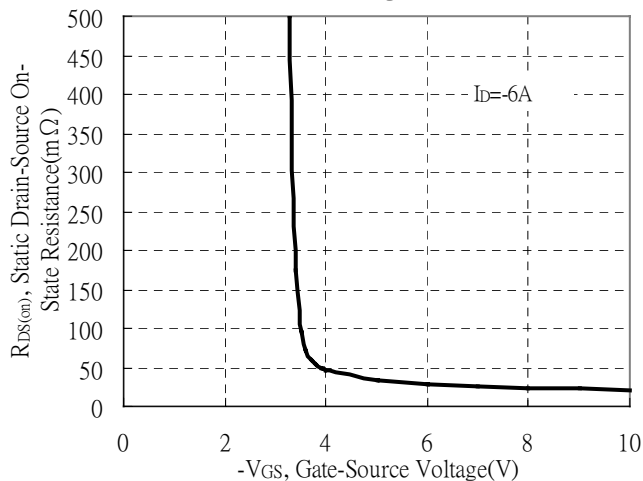
Static Drain-Source On-State resistance vs Drain Current



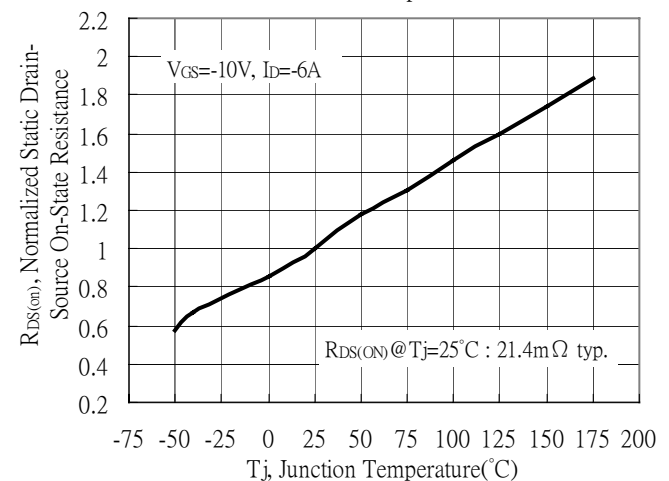
Source Drain Current vs Source-Drain Voltage



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

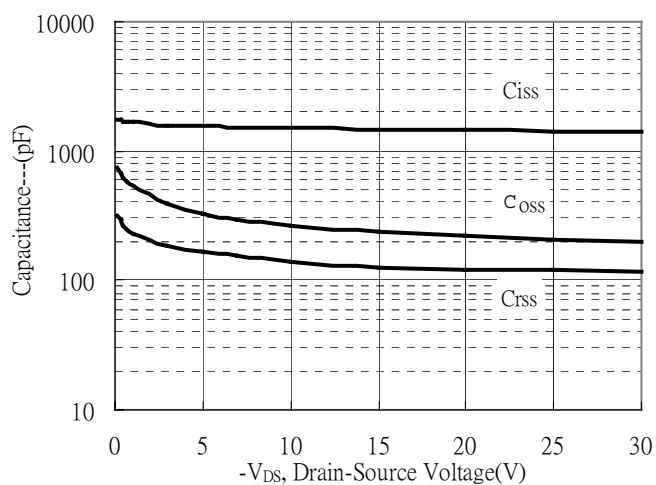


Normalized Drain-Source On-State Resistance vs Junction Temperature

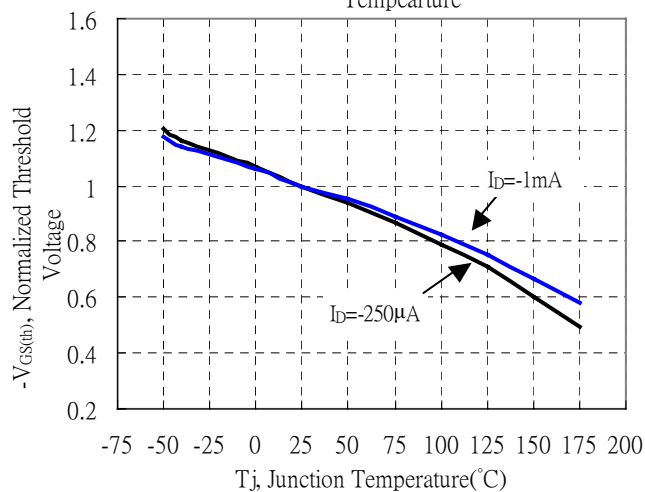


Typical Characteristics(Cont.)

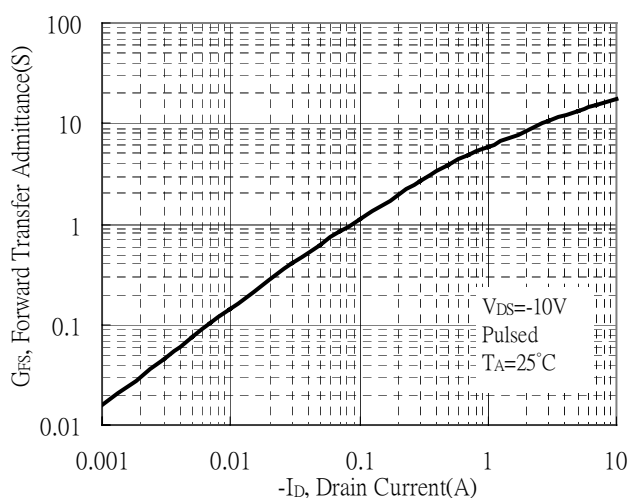
Capacitance vs Drain-to-Source Voltage



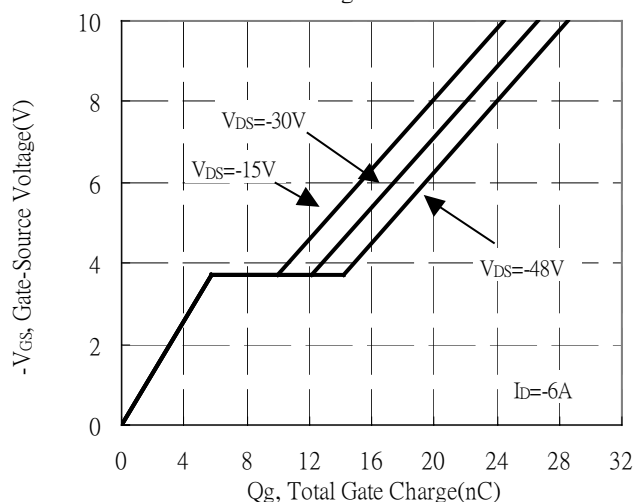
Normalized Threshold Voltage vs Junction Temperature



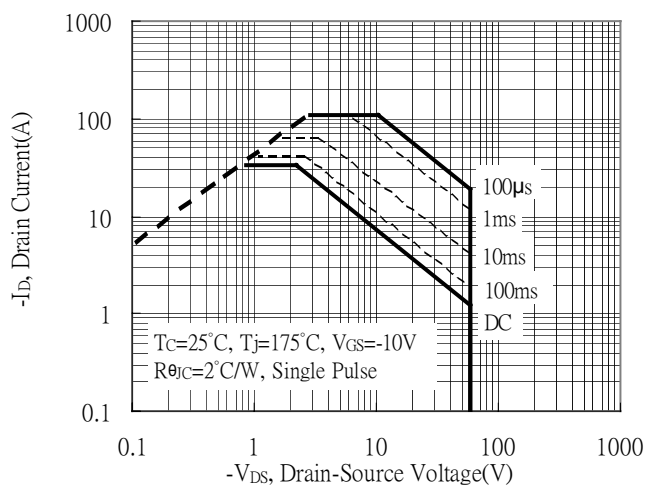
Forward Transfer Admittance vs Drain Current



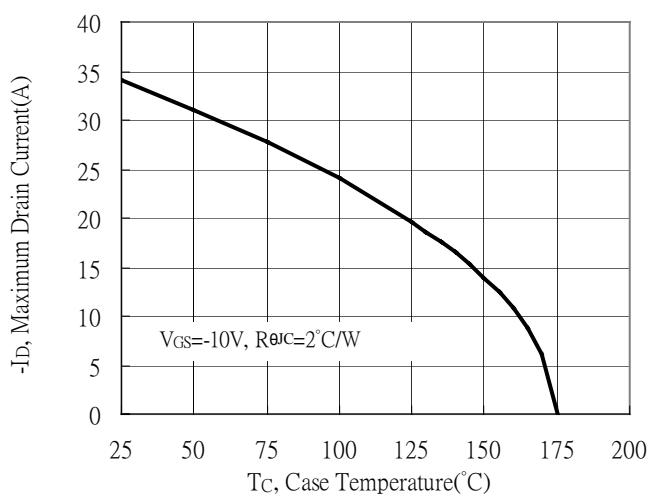
Gate Charge Characteristics



Maximum Safe Operating Area

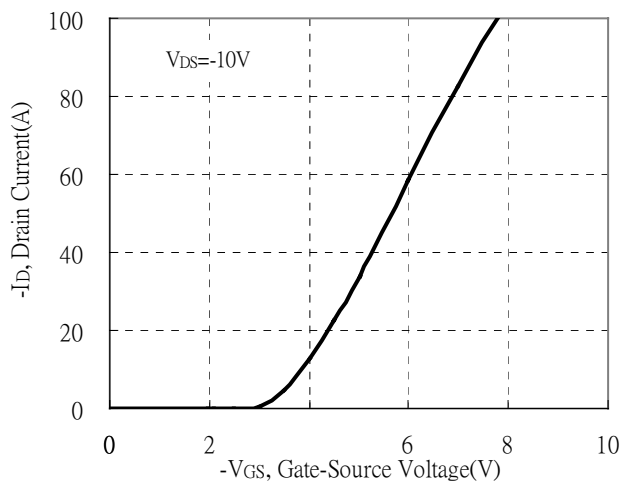


Maximum Drain Current vs Case Temperature

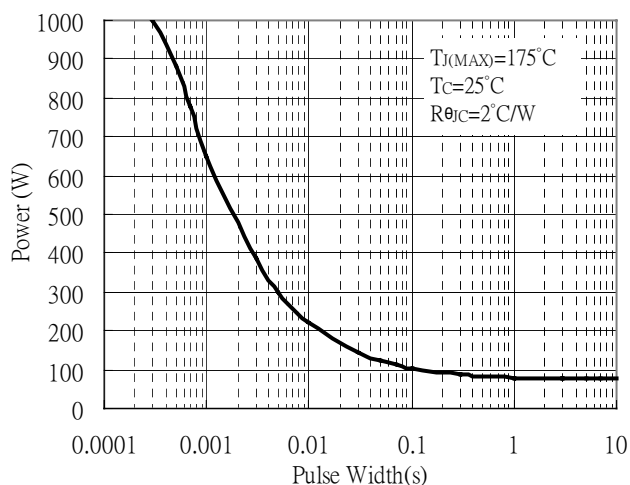


Typical Characteristics(Cont.)

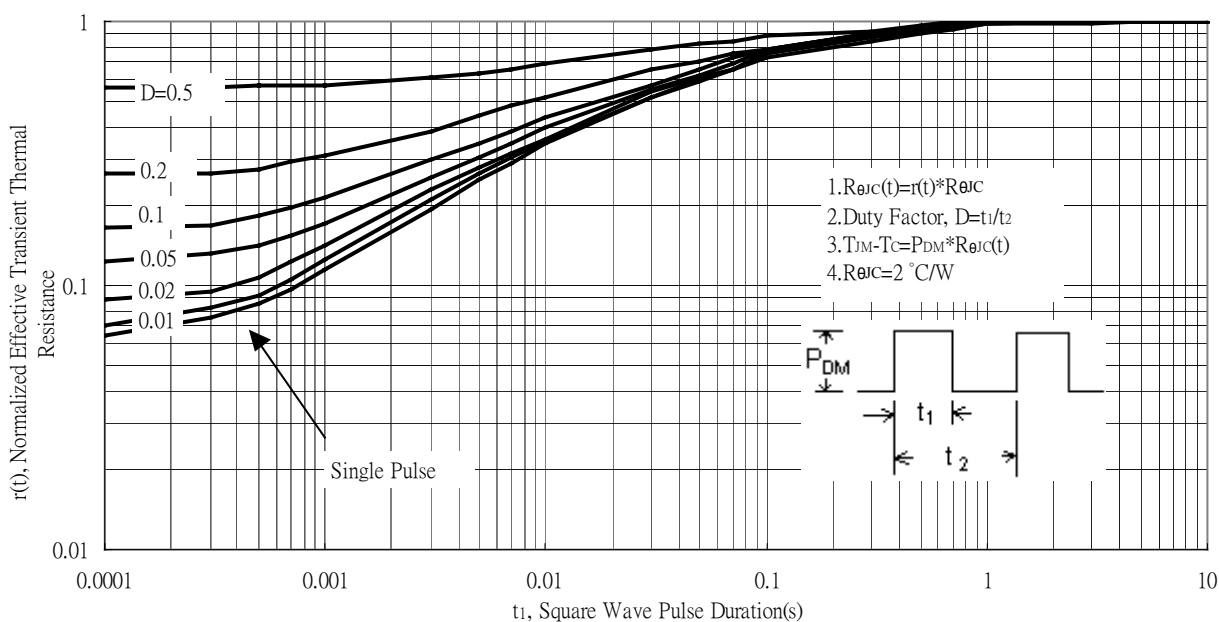
Typical Transfer Characteristics



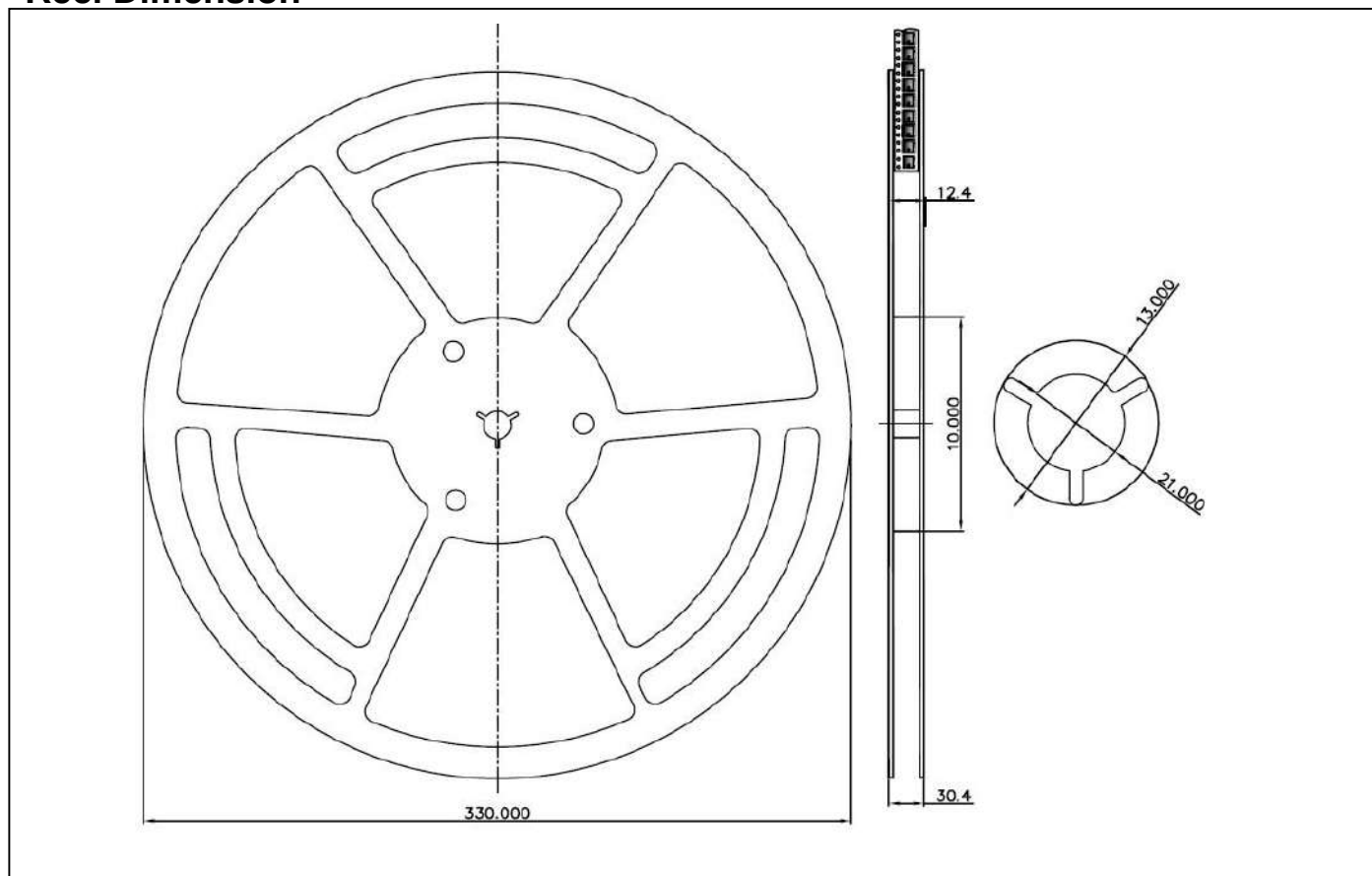
Single Pulse Power Rating, Junction to Case



Transient Thermal Response Curves



Reel Dimension



Carrier Tape Dimension

