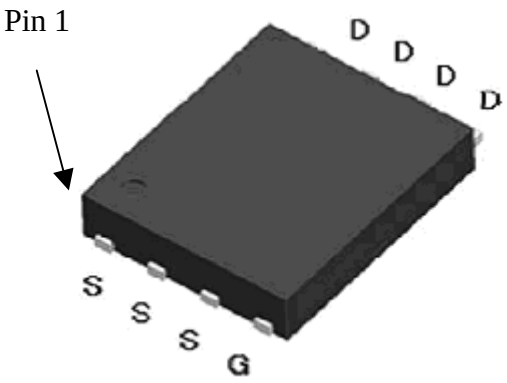
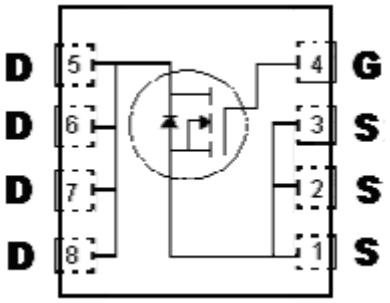
N-Channel Enhancement Mode Power MOSFET

Features:

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

DFN5×6





G：Gate D：Drain S：Source

BV_{DSS}	**200V**
I_D@V_{GS}=10V, T_C=25˚C	**11A**
$R_{DS(ON)}$@V_{GS}=10V, I_D=9A	**156 mΩ (typ)**

Ordering Information

Device	Package	Shipping
KPRE130N20	DFN 5 ×6 (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}	200	V
Gate-Source Voltage			V_{GS}	±20	
Continuous Drain Current @T_C=25°C, V_{GS}=10V		(Note 1)	I_D	11	A
Continuous Drain Current @T_C=100°C, V_{GS}=10V		(Note 1)		7	
Continuous Drain Current @T_A=25°C, V_{GS}=10V		(Note 2)	I_{DSM}	2.4	
Continuous Drain Current @T_A=70°C, V_{GS}=10V		(Note 2)		1.9	
Pulsed Drain Current @ V_{GS}=10V		(Note 3)	I_{DM}	30	
Avalanche Current		(Note 3)	I_{AS}	3	
Single Pulse Avalanche Energy @ L=1mH, I_D=3Amps, V_{DD}=50V		(Note 2)	E_{AS}	4.5	mJ
Repetitive Avalanche Energy		(Note 3)	E_{AR}	4.5	
Power Dissipation	T_C=25°C	(Note 1)	P_D	50	W
	T_C=100°C	(Note 1)		20	
	T_A=25°C	(Note 2)	P_{DSM}	2.5	
	T_A=70°C	(Note 2)		1.6	
Operating Junction and Storage Temperature			Tj, Tstg	-55~+150	°C

*Drain current limited by maximum junction temperature

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{\theta JC}$	2.5	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 4)	$R_{\theta JA}$	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 $R_{\theta JA}$ 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 $R_{\theta JA}$ 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 on1 in² copper pad of FR-4 board, t≤10s; 125°C/W when mounted on minimum copper pad.

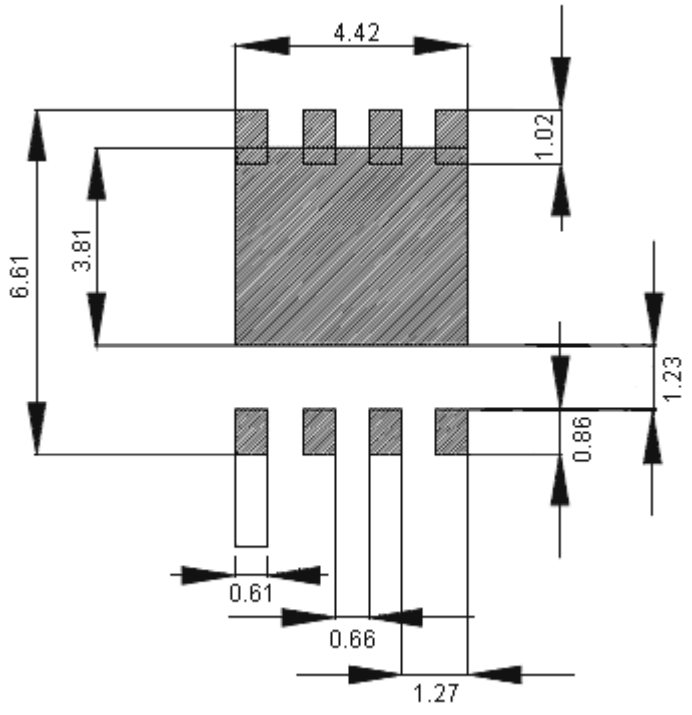
Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	200	-	-	V	V_{GS}=0V, I_D=250μA
$\Delta BV_{DSS}/\Delta Tj$	-	0.2	-	V/°C	Reference to 25°C, I_D=250μA
$V_{GS(th)}$	2.0	-	4.0	V	V_{DS} = V_{GS}, I_D=250μA
*G_{FS}	-	12	-	S	V_{DS} =10V, I_D=9A
I_{GSS}	-	-	±100	nA	V_{GS}=±20V
I_{DSS}	-	-	1	μA	V_{DS} =180V, V_{GS} =0V
	-	-	25		V_{DS} =180V, V_{GS} =0V, Tj=125°C

*$R_{DS(ON)}$	-	156	195	mΩ	V_{GS} =10V, I_D=9A
Dynamic					
*Qg	-	19	-	nC	V_{DS}=160V, I_D=11A, V_{GS}=10V
*Qgs	-	5	-		
*Qgd	-	7.2	-		
*$t_{d(ON)}$	-	12.6	-	ns	V_{DS}=100V, I_D=11A, V_{GS}=10V, R_G=6Ω
*tr	-	35	-		
*$t_{d(OFF)}$	-	27.6	-		
*t_f	-	14.6	-		
Ciss	-	813	-	pF	V_{GS}=0V, V_{DS}=25V, f=1MHz
Coss	-	85	-		
Crss	-	36	-		
Source-Drain Diode					
*I_S	-	-	11	A	
*I_{SM}	-	-	30		
*V_{SD}	-	0.84	1.2	V	I_S=10A, V_{GS}=0V
*trr	-	80	-	ns	V_{GS}=0, I_F=10A, dI/dt=100A/μs
*Qrr	-	245	-	nC	

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

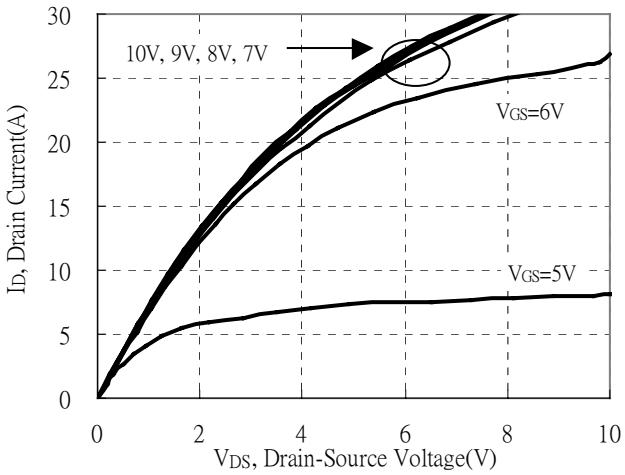
Recommended Soldering Footprint



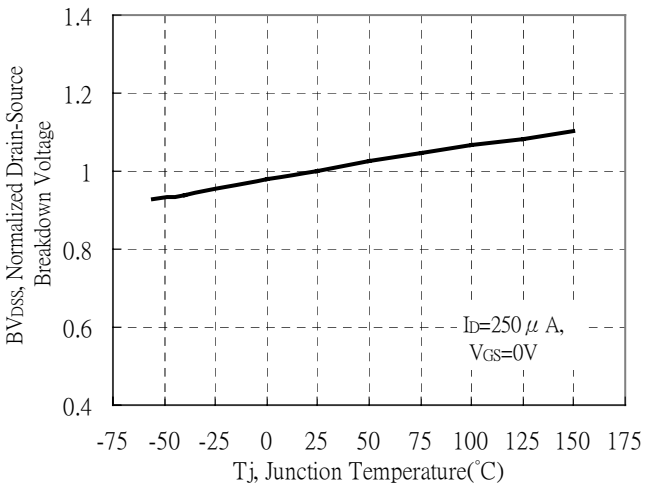
unit : mm

Typical Characteristics

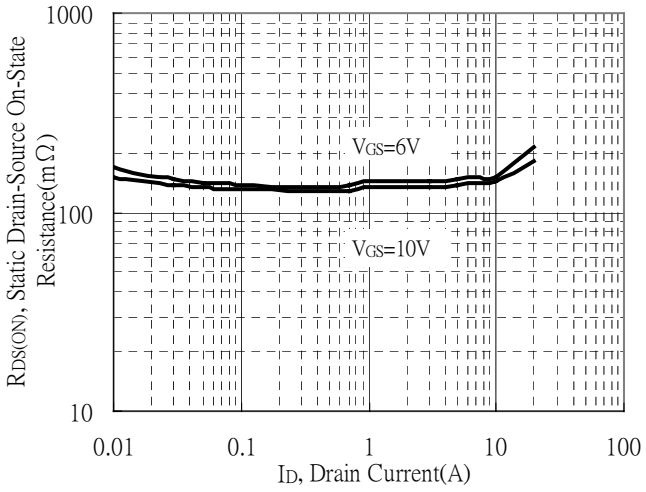
Typical Output Characteristics



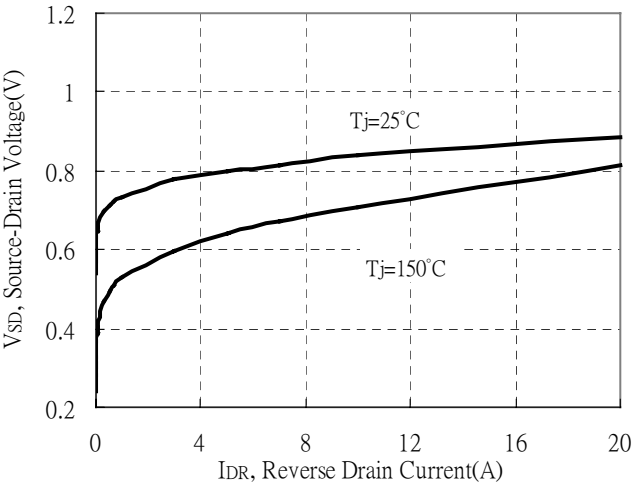
Brekdown Voltage vs Ambient Temperature



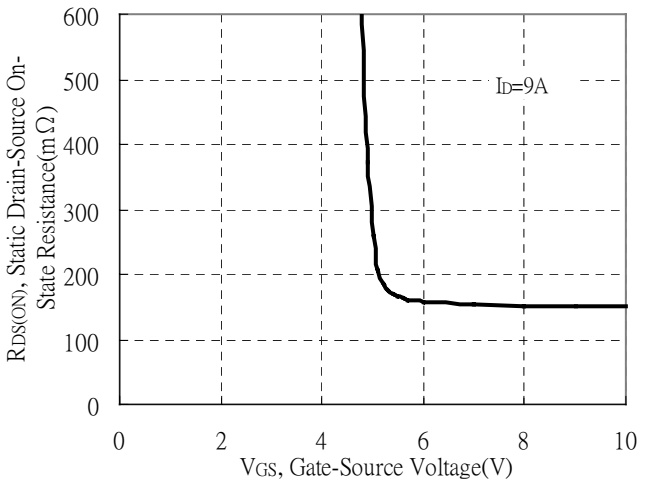
Static Drain-Source On-State resistance vs Drain Current



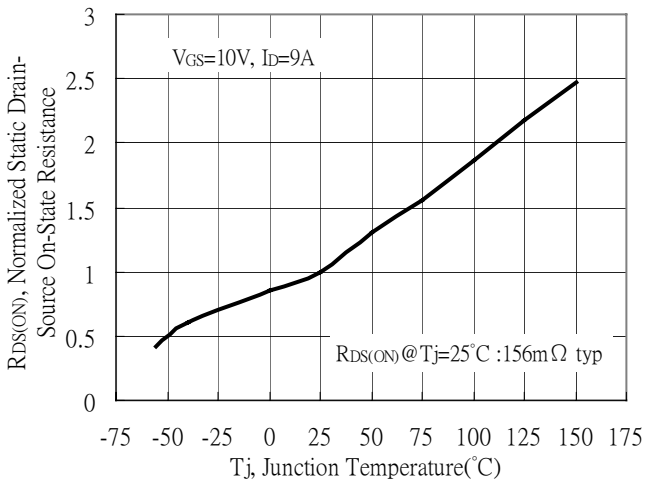
Reverse Drain Current vs Source-Drain Voltage



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

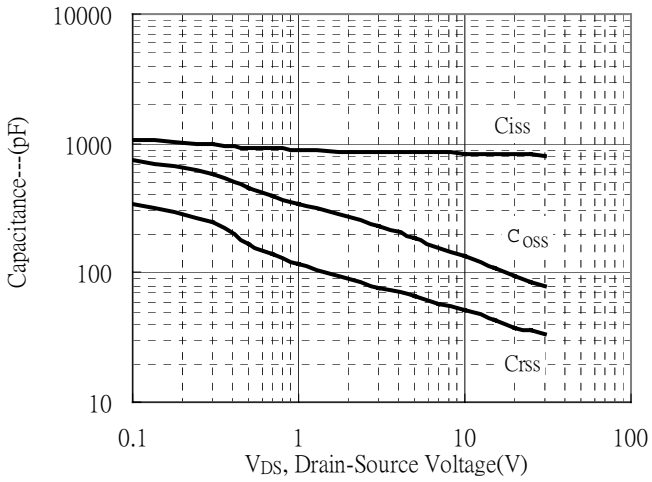


Drain-Source On-State Resistance vs Junction Tempearture

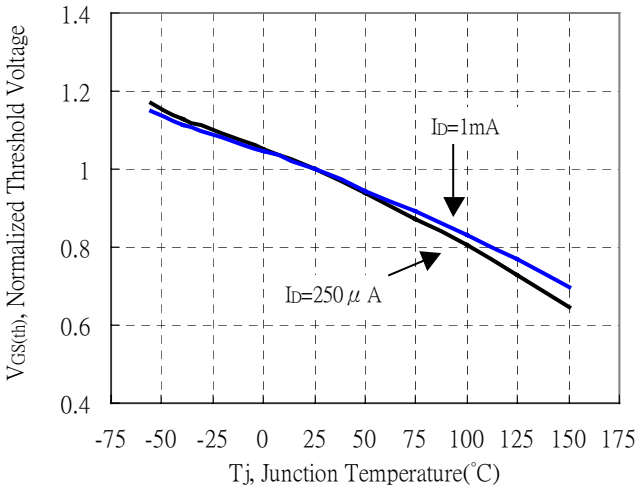


Typical Characteristics(Cont.)

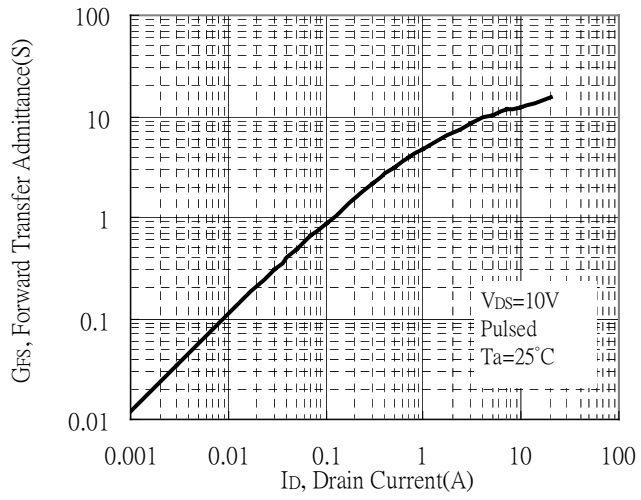
Capacitance vs Drain-to-Source Voltage



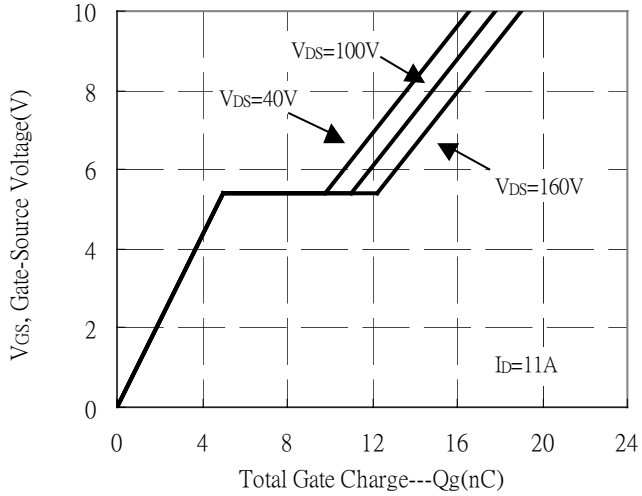
NormalizedThreshold Voltage vs Junction Tempearture



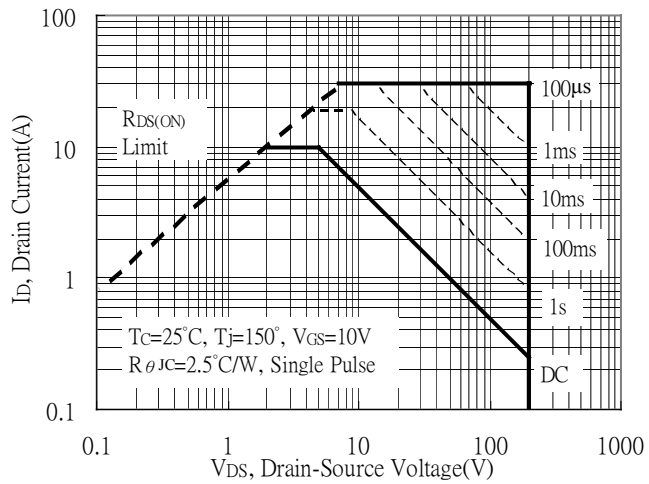
Forward Transfer Admittance vs Drain Current



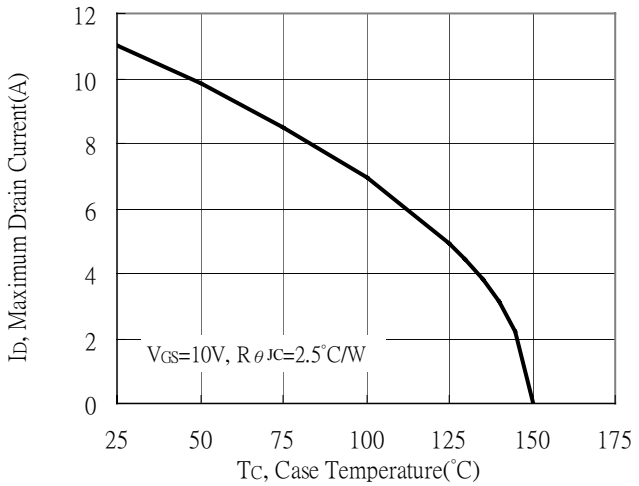
Gate Charge Characteristics



Maximum Safe Operating Area

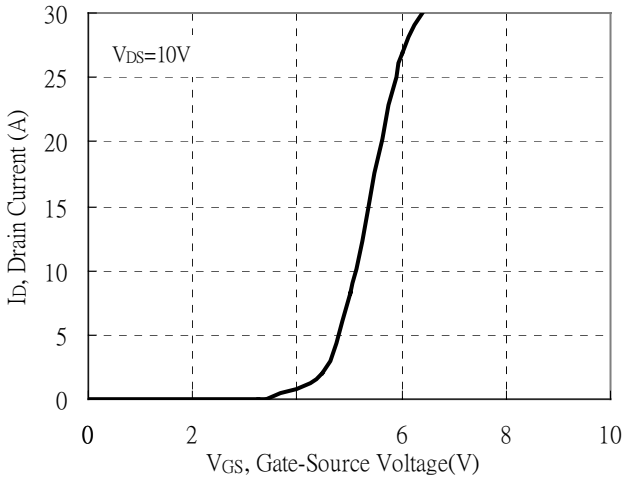


Maximum Drain Current vs Case Temperature

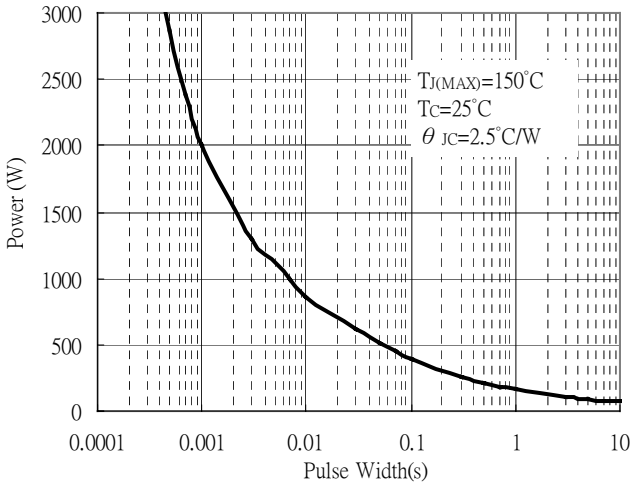


Typical Characteristics(Cont.)

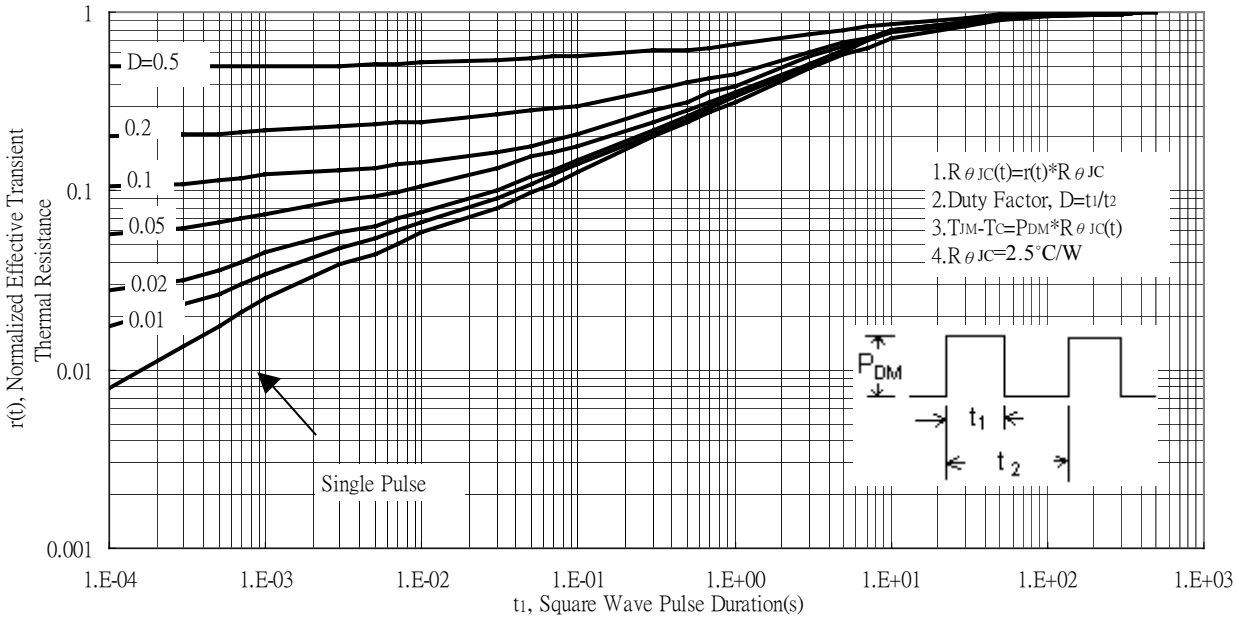
Typical Transfer Characteristics



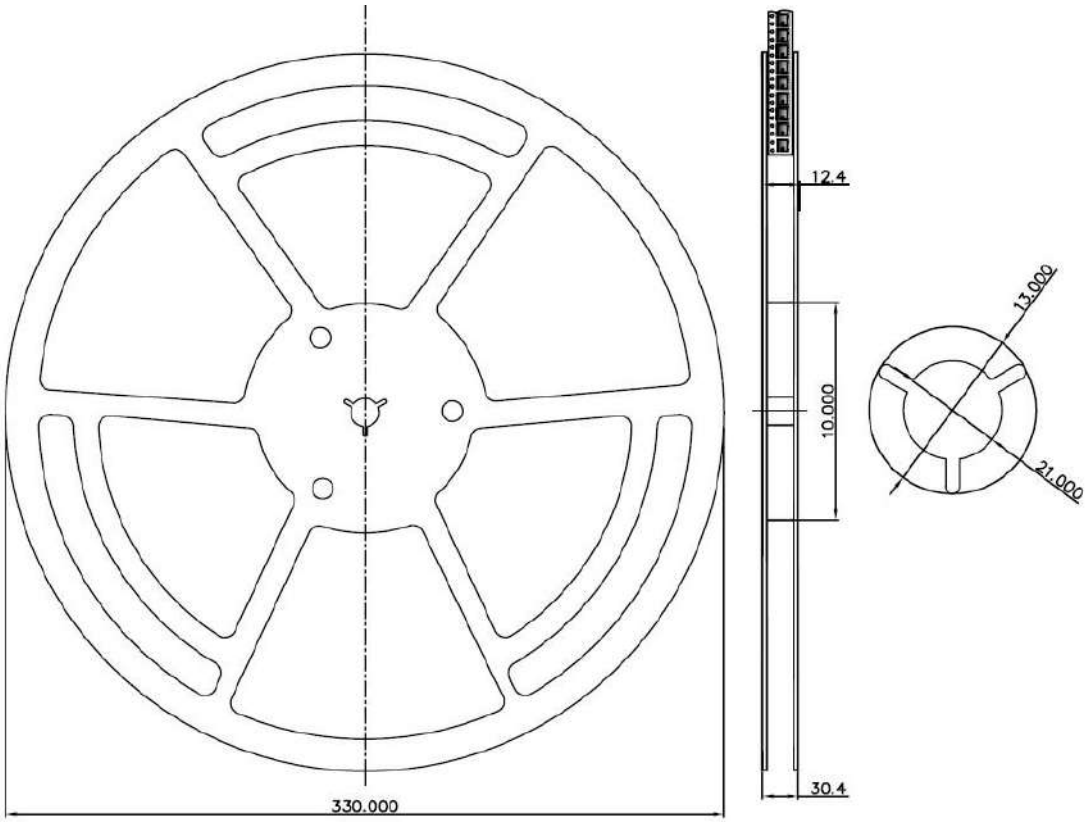
Single Pulse Maximum Power Dissipation



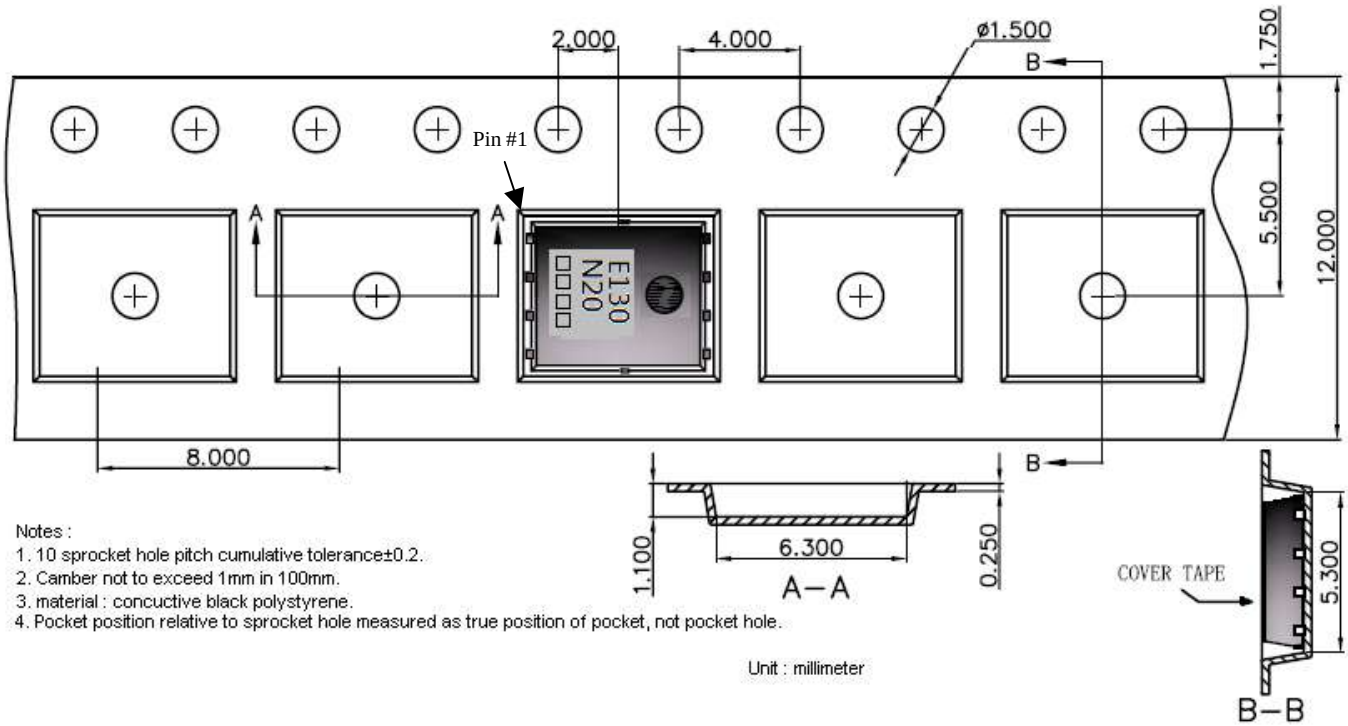
Transient Thermal Response Curves



Reel Dimension



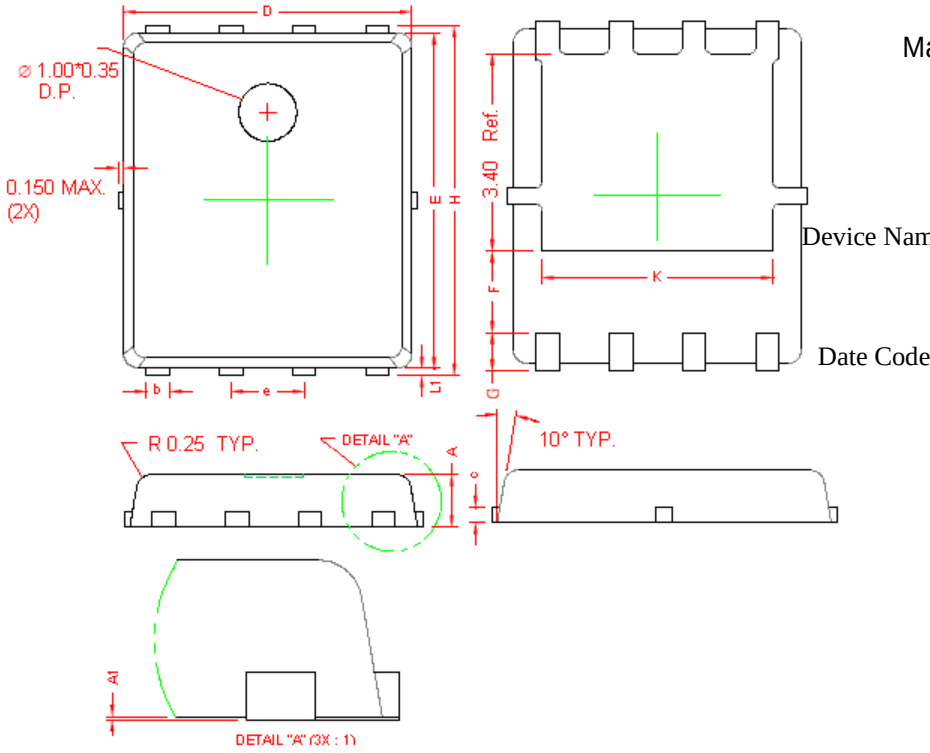
Carrier Tape Dimension



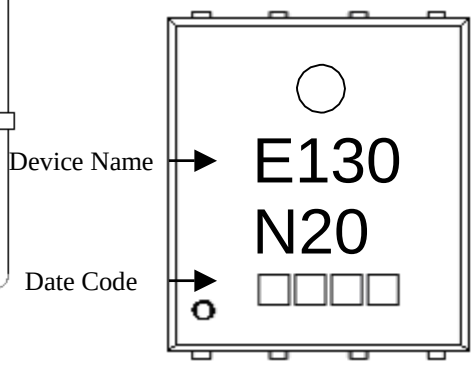
Notes :
1. 10 sprocket hole pitch cumulative tolerance±0.2.
2. Camber not to exceed 1mm in 100mm.
3. material : concuctive black polystyrene.
4. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

DFN5x6 Dimension



Marking:



8-Lead DFN5x6 Plastic Package

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	