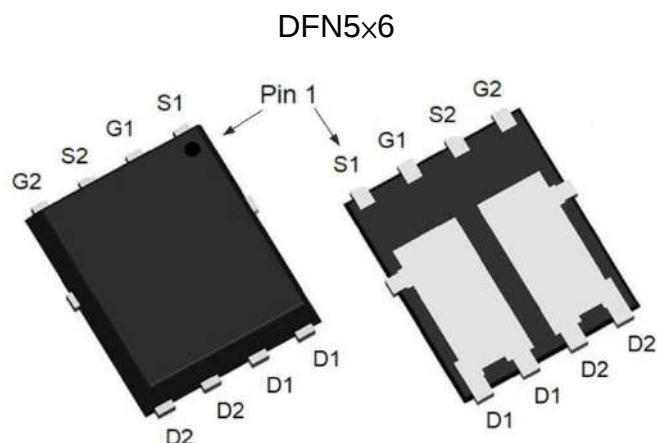


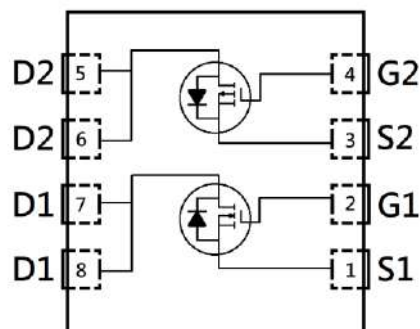
N- AND P-Channel Enhancement Mode MOSFET

Features:

- Simple drive requirement
- Low on-resistance
- Fast switching speed
- Pb-free lead plating and halogen-free package



	N-CH	P-CH
BV_{DSS}	30V	-30V
$I_D@V_{GS}=10V(-10V)$,	15A	-8.9A
$I_D@V_{GS}=10V(-10V)$,	43.3A	-25.8A
$R_{DS(on)}(typ)@V_{GS}=10V(-10V)$	6.2m Ω	19.2m Ω
$R_{DS(on)}(typ)@V_{GS}=4.5V(-4.5V)$	9m Ω	32m Ω



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KPRB5D8C03RD	DFN 5 × 6 (Pb-free lead plating & halogen-free package)	3000 pcs / Tape & Reel

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

Parameter		Symbol	Limits		Unit
			N-channel	P-channel	
Drain-Source Breakdown Voltage		BV _{DSS}	30	-30	V
Gate-Source Voltage		V _{GS}	±20	±20	
Continuous Drain Current	T _A =25°C, V _{GS} =10V (-10V)	I _{DSM}	15	-8.9	A
	T _A =70°C, V _{GS} =10V (-10V)		12	-7.1	
	T _C =25°C, V _{GS} =10V (-10V)	I _D	43.3	-25.8	
	T _C =100°C, V _{GS} =10V (-10V)		27.4	-16.3	
Pulsed Drain Current (Note 1 & 2)		I _{DM}	66	-40	
Avalanche Current @ L=0.1mH		I _{AS}	15	-15	
Avalanche Energy @ L=0.5mH		E _{AS}	16	16	mJ
Power Dissipation	T _A =25 °C	P _{DSM}	2.5 (Note 3)		W
	T _A =70 °C		1.6 (Note 3)		
	T _C =25 °C	P _D	21		
	T _C =100 °C		8.4		
Operating Junction and Storage Temperature Range		T _J ; T _{stg}	-55~+150		°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	6	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{θJA}	50 (Note 3)	

Note : 1. Pulse width limited by maximum junction temperature

2. Duty cycle ≤ 1%

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

N-Channel Electrical Characteristics (T_c=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	30	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	1	-	2.5		V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =24V, V _{GS} =0V
	-	-	25		V _{DS} =24V, V _{GS} =0V, T _J =125°C
*R _{DS(ON)}	-	6.2	8.2	mΩ	I _D =6A, V _{GS} =10V
	-	9	13		I _D =4A, V _{GS} =4.5V
*G _{FS}	-	13.5	-	S	V _{DS} =5V, I _D =5A
Dynamic					
C _{iss}	-	765	-	pF	V _{DS} =25V, V _{GS} =0V, f=1MHz

Coss	-	418	-		
Crss	-	40	-		
*td(ON)	-	10	-	ns	V _{DS} =15V, I _D =6A, V _{GS} =10V, R _G =1Ω
*tr	-	12.8	-		
*td(OFF)	-	25.8	-		
*tf	-	5.6	-		
*Qg	-	14.5	-		
*Qgs	-	3.3	-	nC	V _{DS} =15V, I _D =6A, V _{GS} =10V
*Qgd	-	3.2	-		
Rg	-	1	-	Ω	f=1MHz
Body Diode					
*V _{SD}	-	0.82	1.2	V	V _{GS} =0V, I _S =6A
*trr	-	20	-	ns	I _F =6A, dI _F /dt=100A/μs
*Qrr	-	8.2	-	nC	

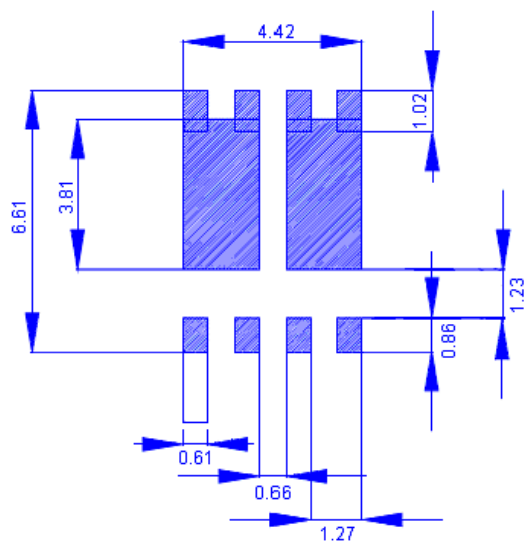
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

P-Channel Electrical Characteristics (Tc=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	-30	-	-	V	V _{GS} =0V, I _D =-250μA
V _{GS(th)}	-1	-	-2.5		V _{DS} =V _{GS} , I _D =-250μA
I _{GSS}	-	-	±10	μA	V _{GS} =±16V, V _{DS} =0V
I _{DSS}	-	-	-1		V _{DS} =-24V, V _{GS} =0V
	-	-	-25		V _{DS} =-24V, V _{GS} =0V, T _J =125°C
*R _{DS(ON)}	-	19.2	26	mΩ	I _D =-6A, V _{GS} =-10V
	-	32	45		I _D =-4A, V _{GS} =-4.5V
*G _{FS}	-	14	-	S	V _{DS} =-5V, I _D =-6A
R _g	-	8.7	-	Ω	f=1MHz
Dynamic					
C _{iss}	-	994	-	pF	V _{DS} =-25V, V _{GS} =0V, f=1MHz
C _{oss}	-	183	-		
C _{rss}	-	146	-		
*t _{d(ON)}	-	7	-	ns	V _{DS} =-15V, I _D =-1A, V _{GS} =-10V, R _G =6Ω
*t _r	-	9	-		
*t _{d(OFF)}	-	63	-		
*t _f	-	25.4	-		
*Q _g	-	21.2	-	nC	V _{DS} =-15V, I _D =-6A, V _{GS} =-10V
*Q _{gs}	-	2.9	-		
*Q _{gd}	-	4.8	-		
Body Diode					
*V _{SD}	-	-0.84	-1.2	V	V _{GS} =0V, I _S =-6A
*t _{rr}	-	10.7	-	ns	I _F =-5A, dI _F /dt=100A/μs
*Q _{rr}	-	4.1	-	nC	

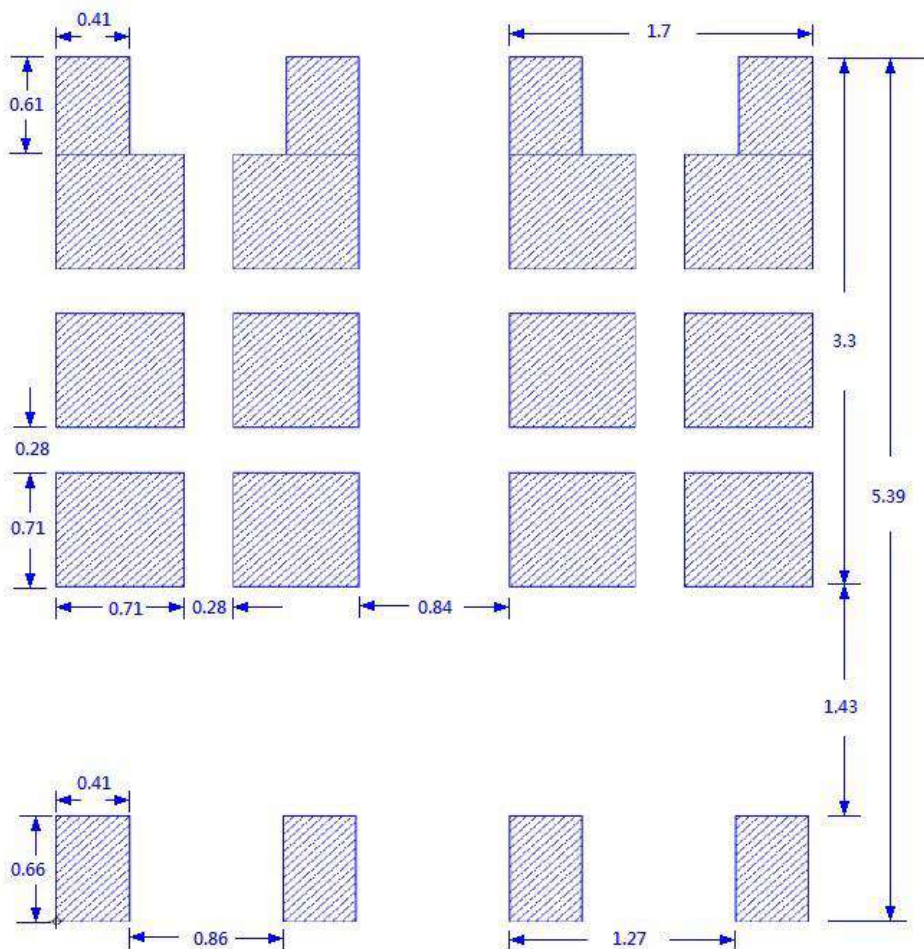
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Recommended Soldering Footprint



unit : mm

Recommended Stencil Design



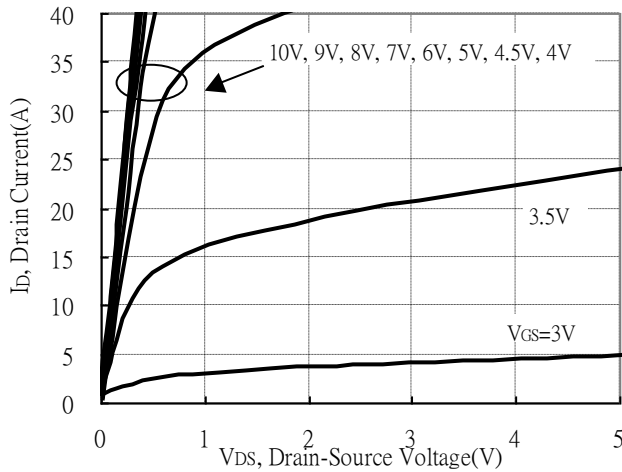
unit : mm

Note : 1. Stencil thickness 5 mil (0.127mm)

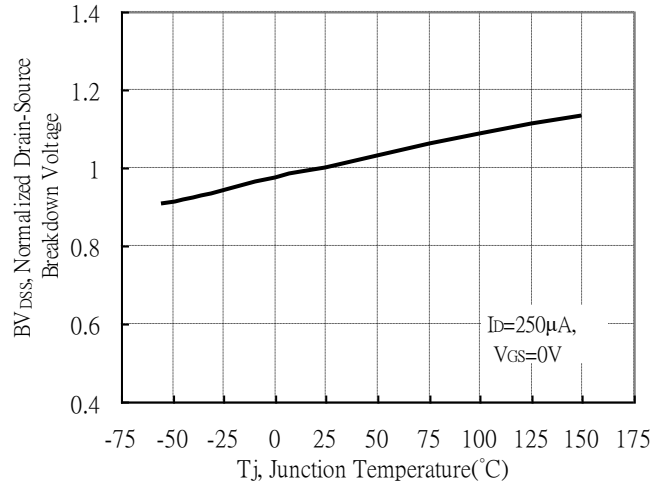
2. May need to be adjusted to specific requirements.

Typical Characteristics : Q1(N-channel)

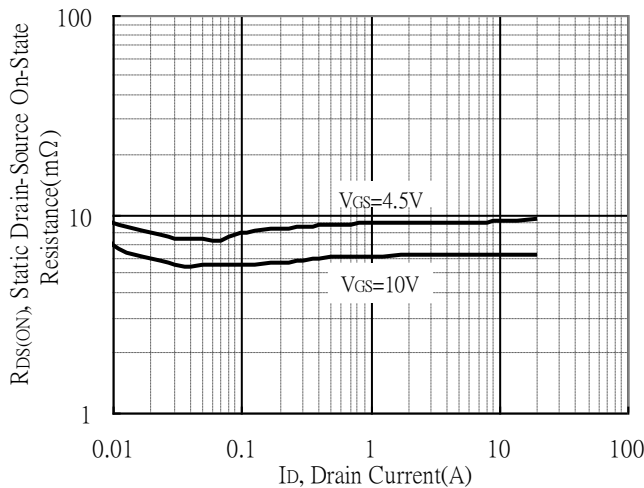
Typical Output Characteristics



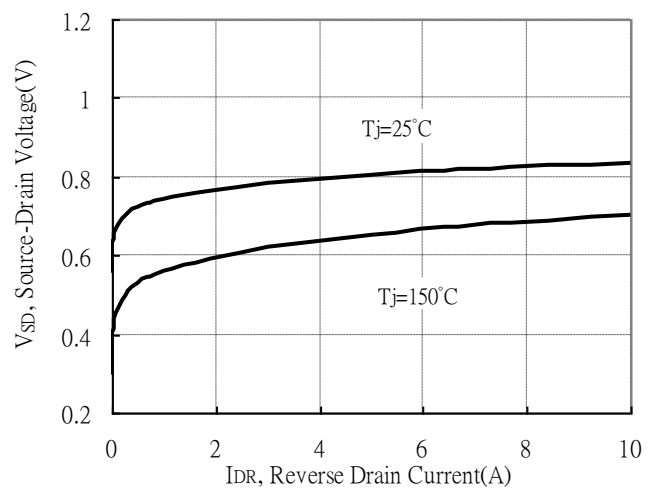
Breakdown Voltage vs Ambient Temperature



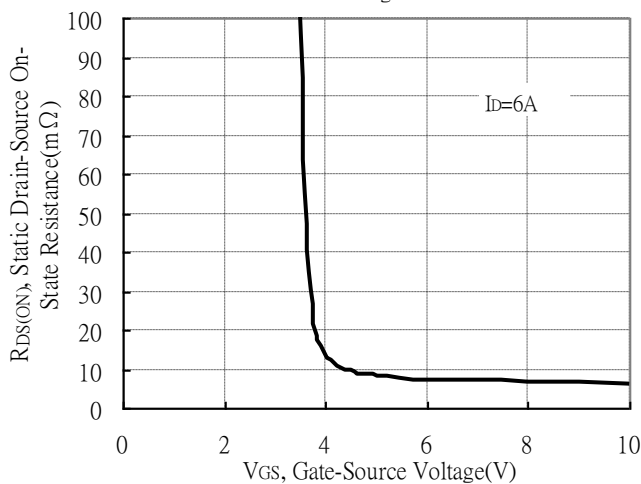
Static Drain-Source On-State resistance vs Drain Current



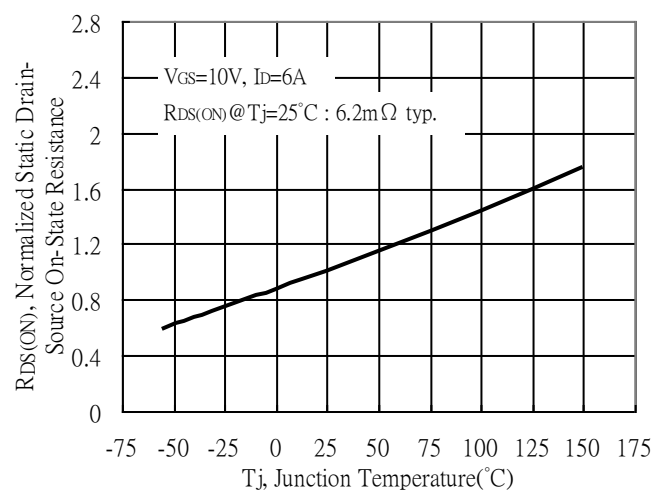
Reverse Drain Current vs Source-Drain Voltage



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

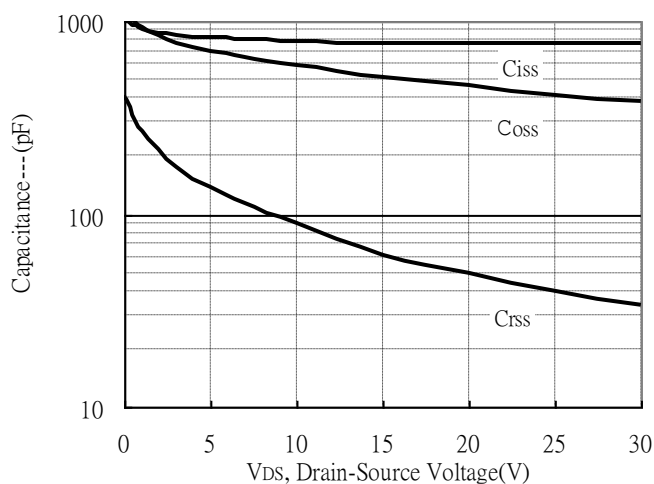


Drain-Source On-State Resistance vs Junction Temperature

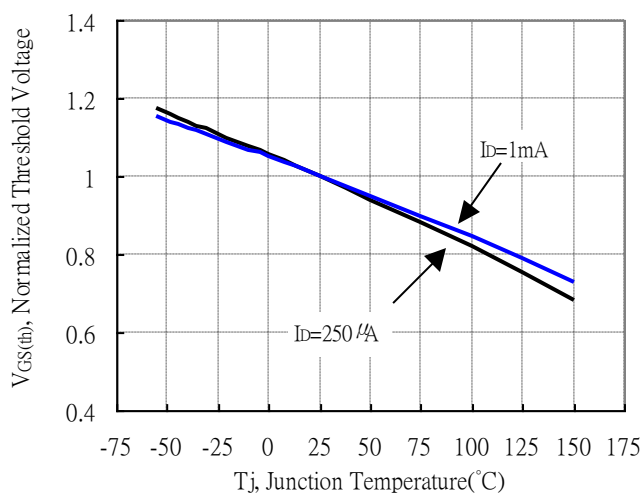


Typical Characteristics(Cont.) : Q1(N-channel)

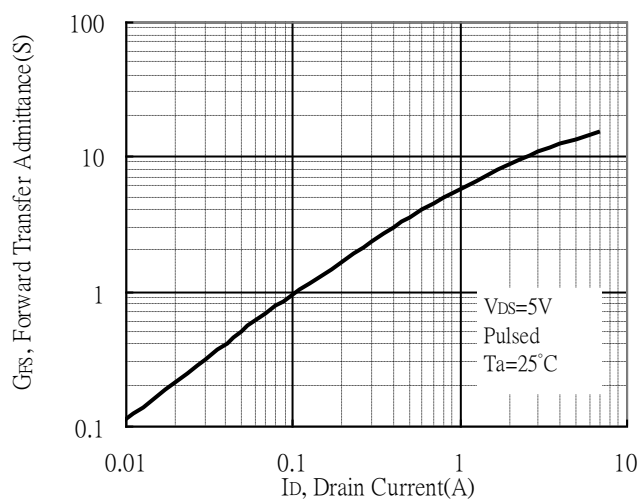
Capacitance vs Drain-to-Source Voltage



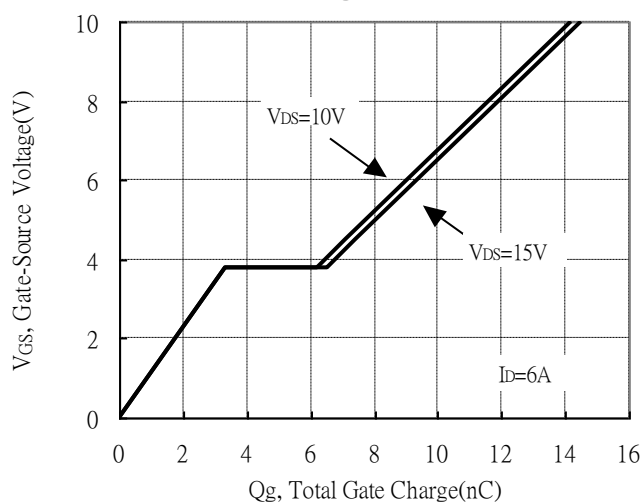
Threshold Voltage vs Junction Temperature



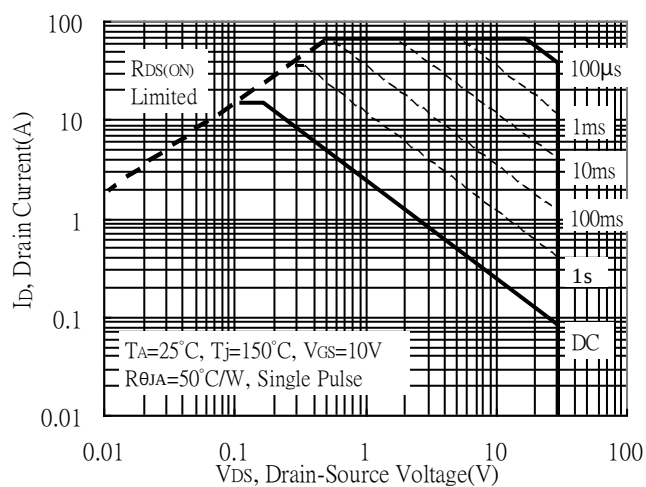
Forward Transfer Admittance vs Drain Current



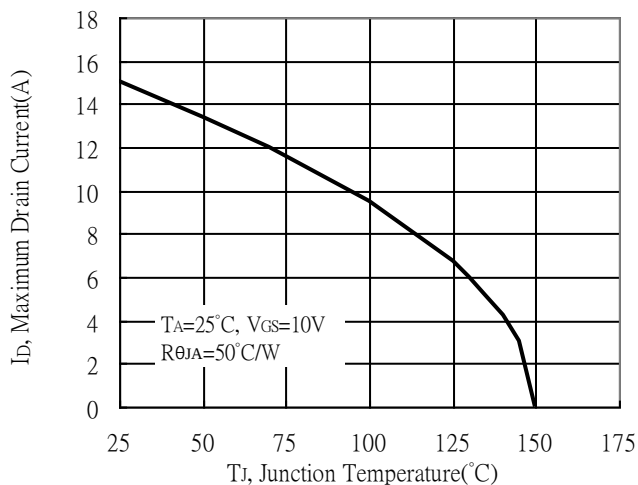
Gate Charge Characteristics



Maximum Safe Operating Area

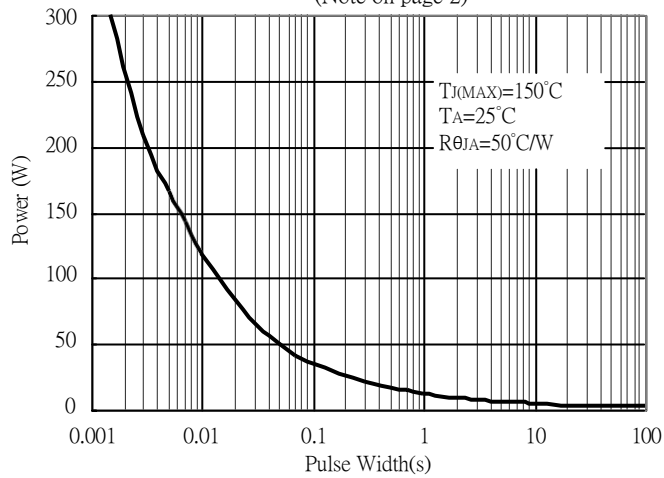


Maximum Drain Current vs Junction Temperature

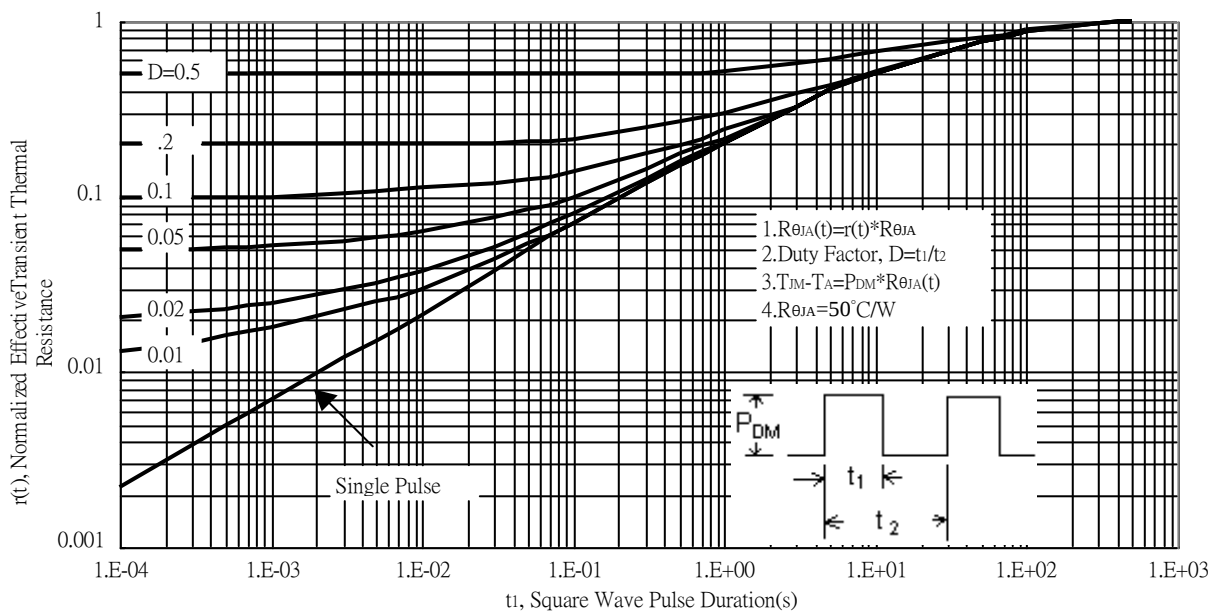


Typical Characteristics(Cont.) : Q1(N-channel)

Single Pulse Power Rating, Junction to Ambient
 (Note on page 2)

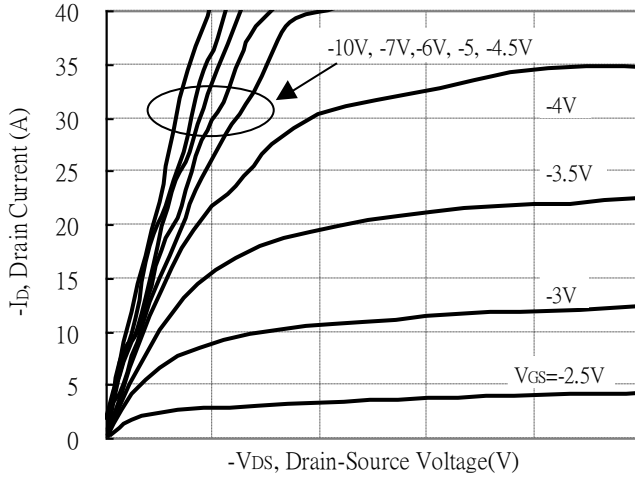


Transient Thermal Response Curves

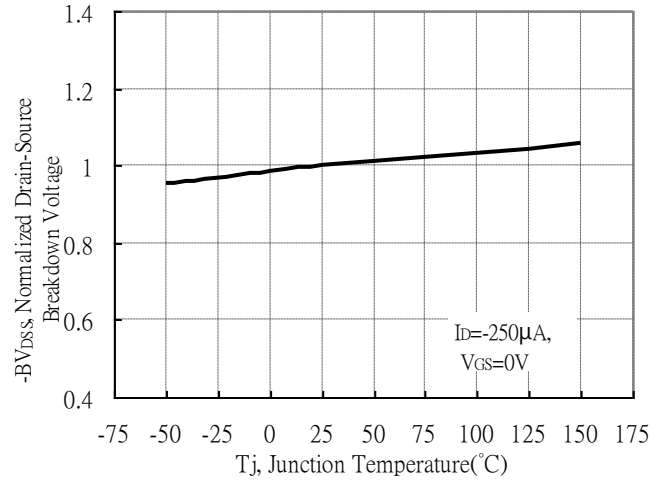


Typical Characteristics : Q2(P-channel)

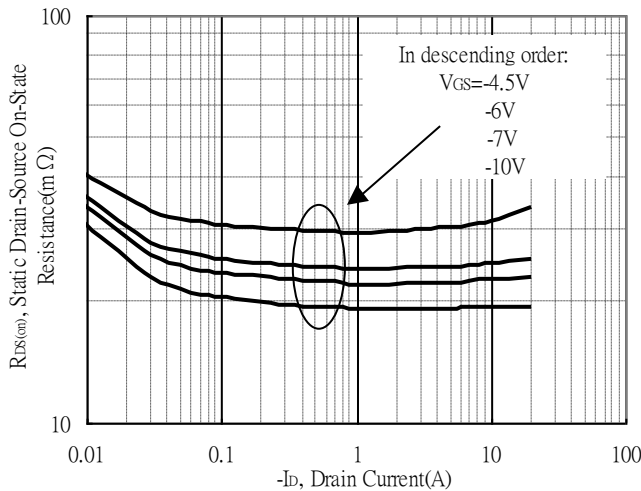
Typical Output Characteristics



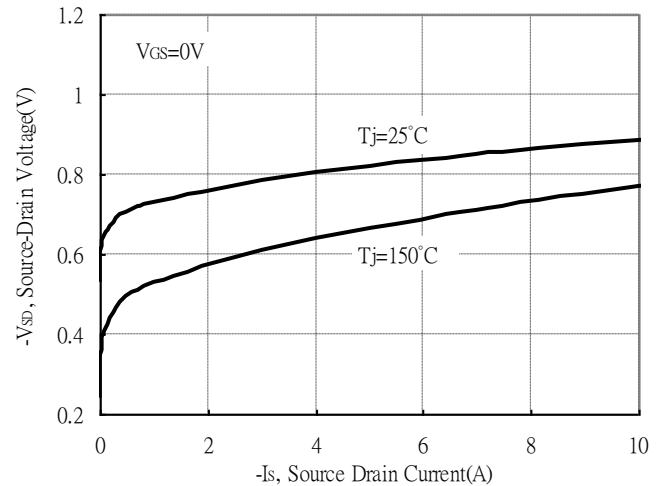
Breakdown Voltage vs Ambient Temperature



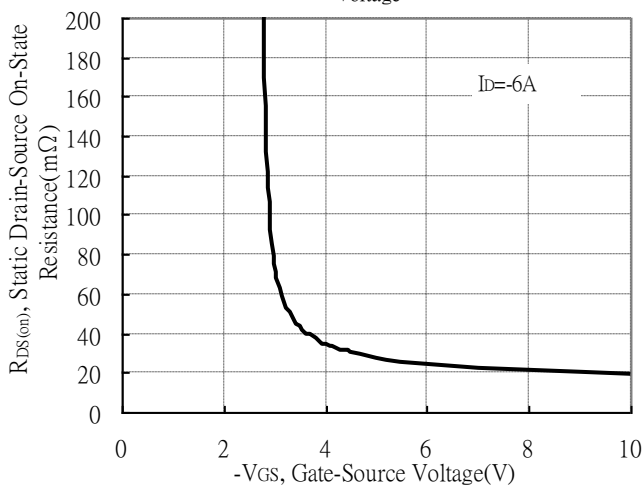
Static Drain-Source On-State resistance vs Drain Current



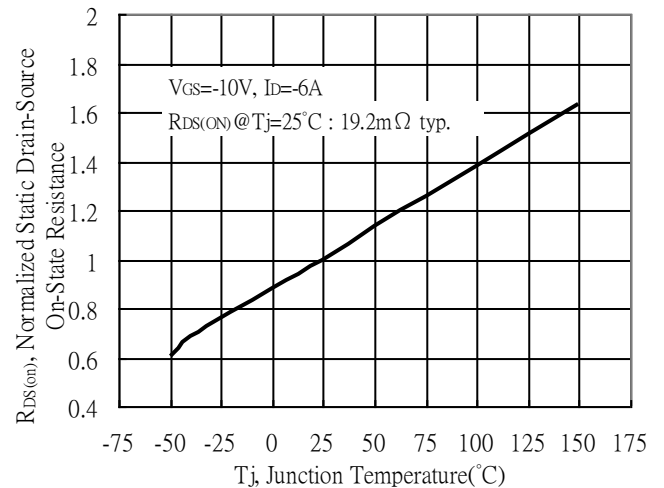
Source Drain Current vs Source-Drain Voltage



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

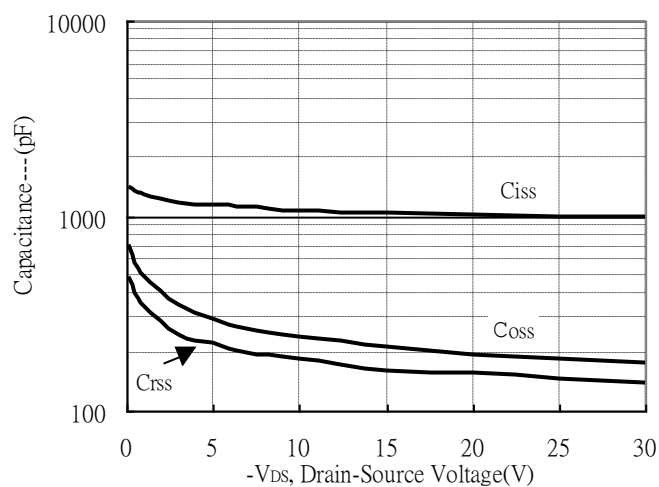


Drain-Source On-State Resistance vs Junction Temperature

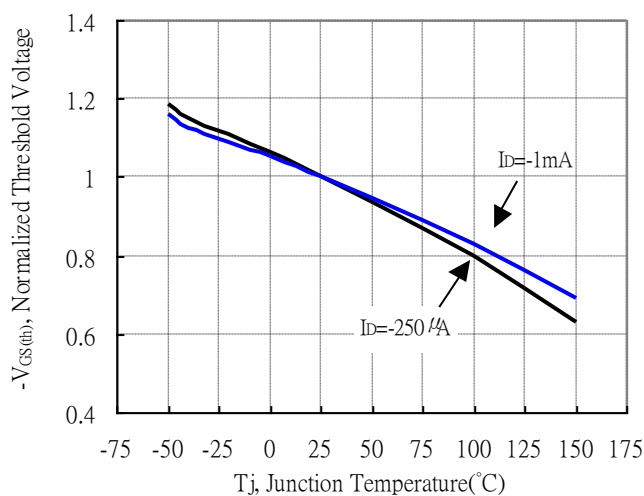


Typical Characteristics(Cont.) : Q2(P-channel)

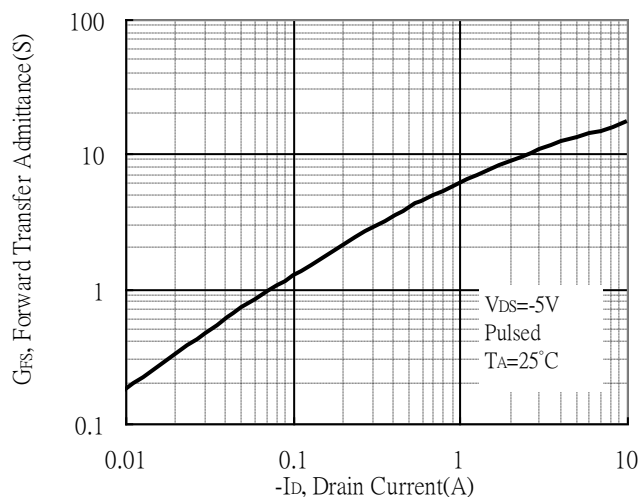
Capacitance vs Drain-to-Source Voltage



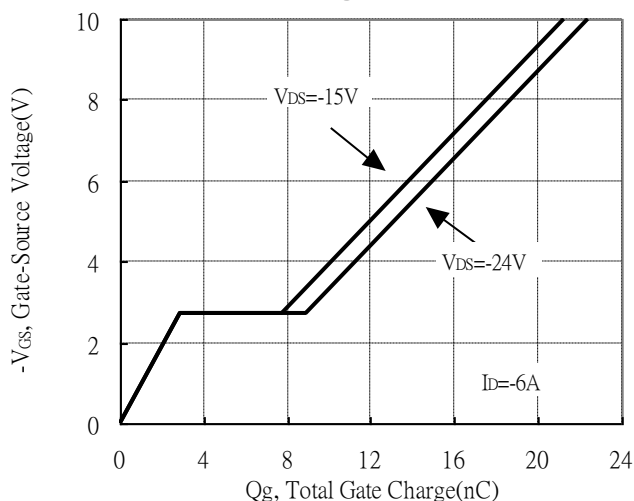
Threshold Voltage vs Junction Temperature



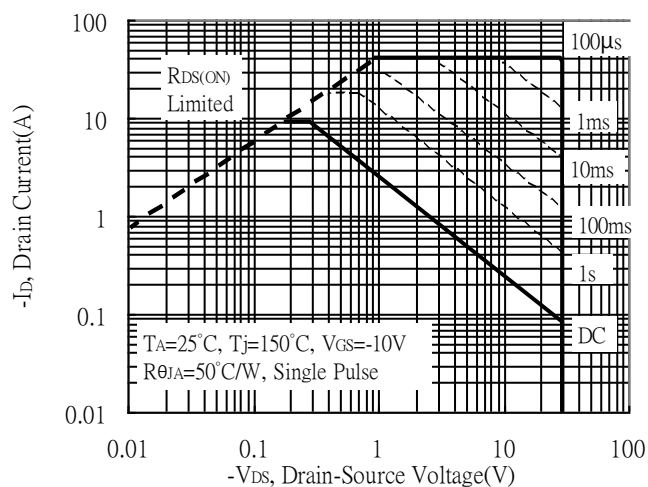
Forward Transfer Admittance vs Drain Current



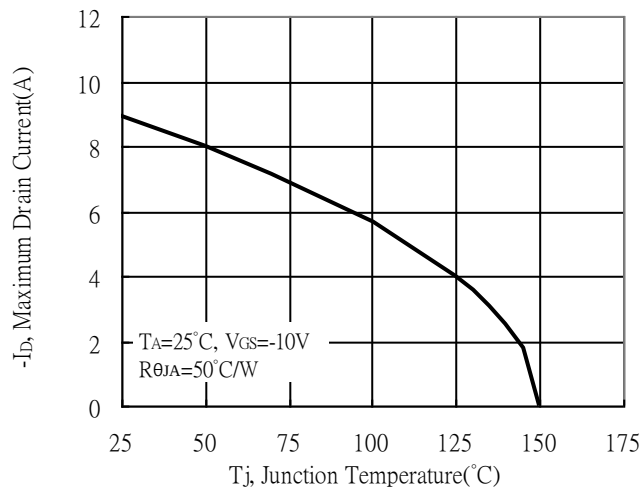
Gate Charge Characteristics



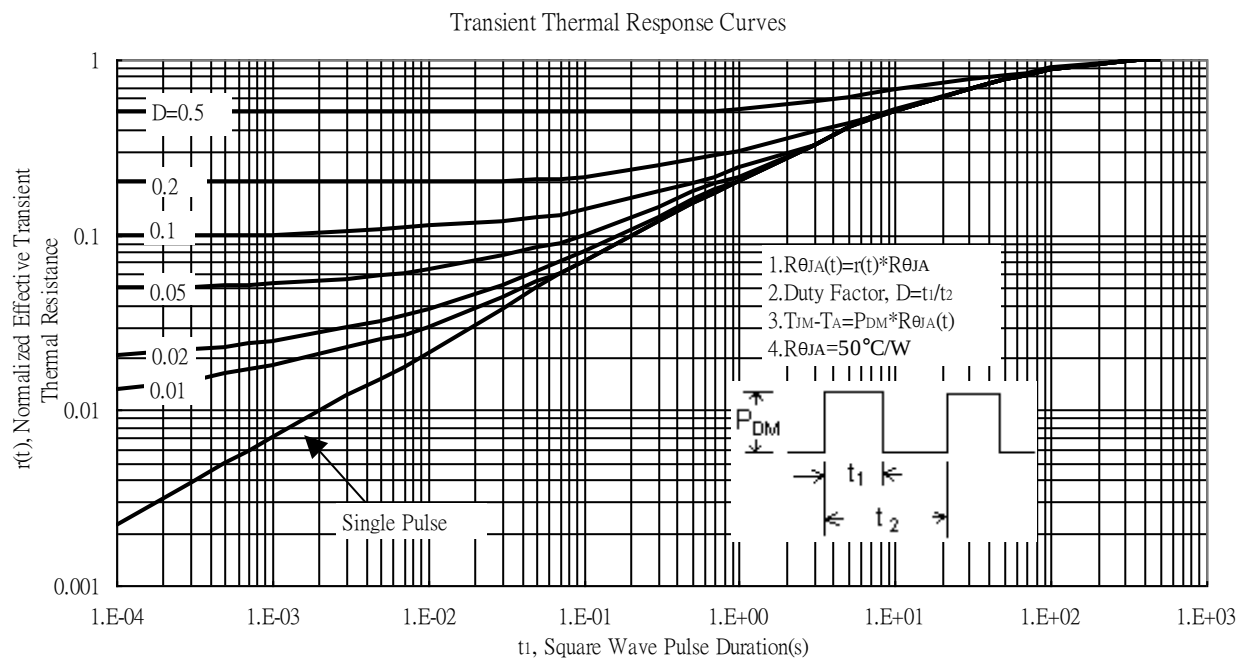
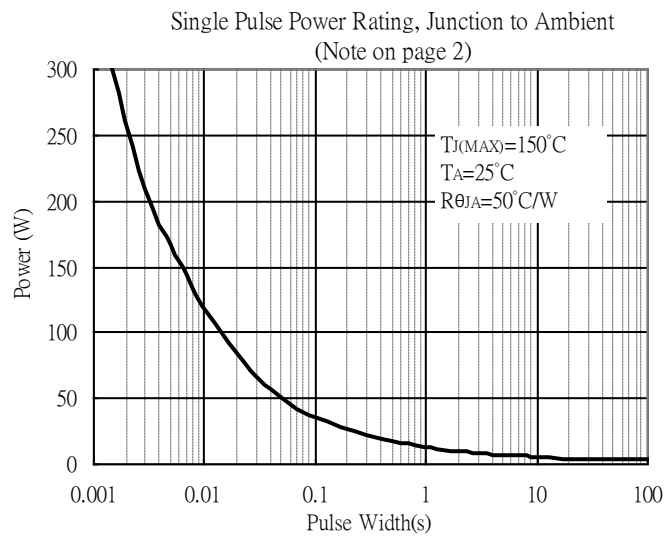
Maximum Safe Operating Area



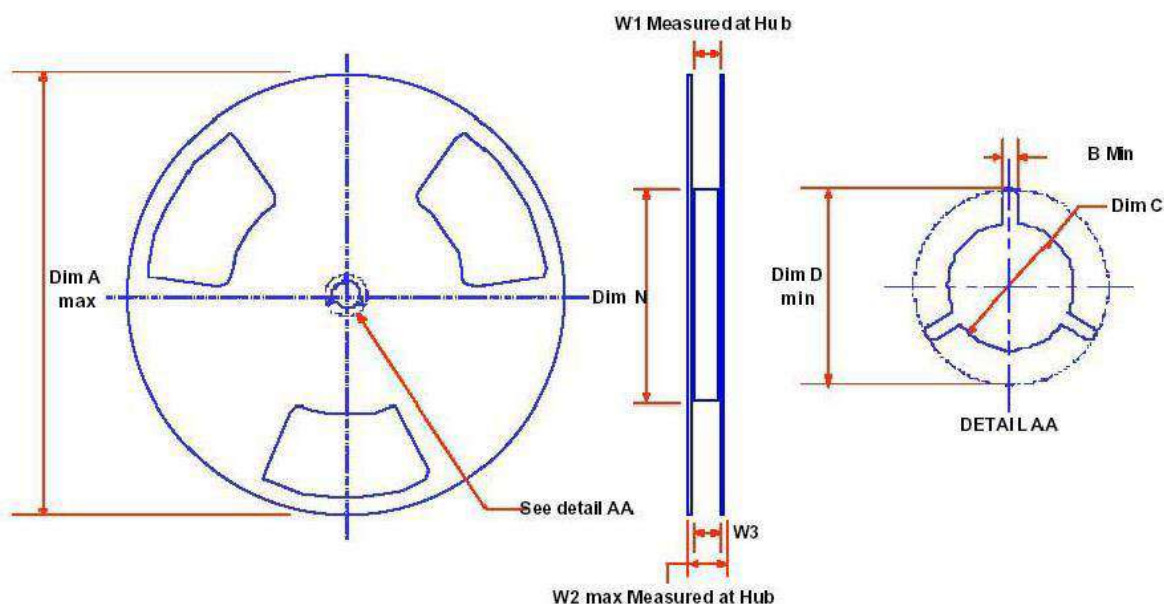
Maximum Drain Current vs Junction Temperature



Typical Characteristics(Cont.) : Q2(P-channel)



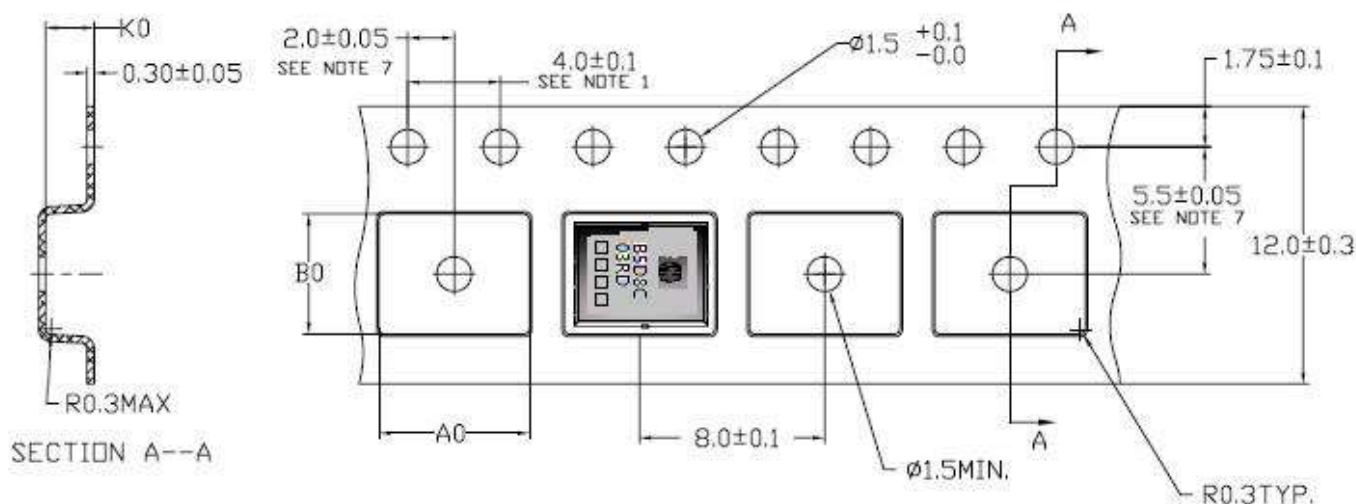
Reel Dimension



Dimensions are in inches and millimeters

Tape Size	Reel Option	Dim A	Dim B	Dim C	Dim D	Dim N	Dim W1	Dim W2	Dim W3 (LSL-USL)
12mm	13" Dia (STD/L99Z)	13.00 330+/-1	0.069 1.6 Min.	0.512 13.0 Min.	0.795 20.2(ref.)	7.00 178+0/-2	0.488 +0.078/-0.000 12.4 +2/0	0.724 18.4(ref.)	0.469 - 0.606 11.9 - 15.4

Carrier Tape Dimension

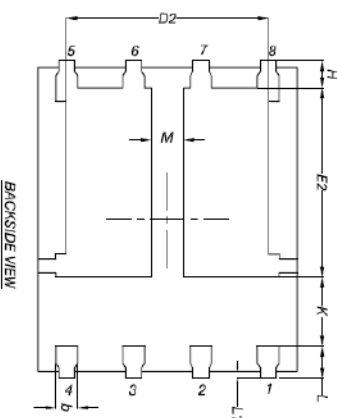
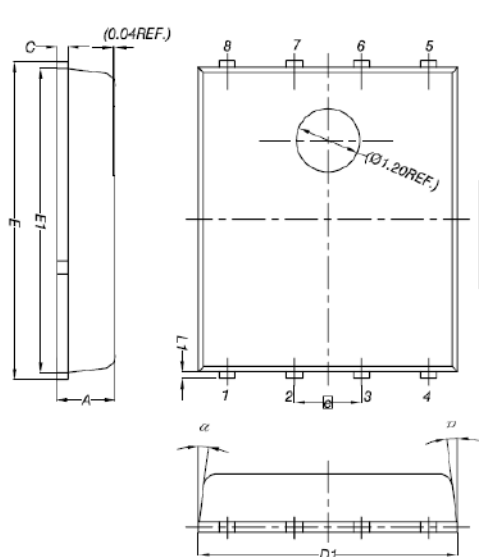


NOTE:

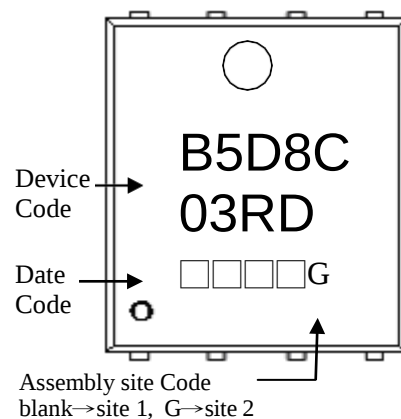
1. 10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ±0.2
2. CAMBER NOT TO EXCEED 1mm IN 100mm, NONCUMULATIVE OVER 250mm.
3. MATERIAL: BLACK STATIC DISSIPATIVE PS.(POLYSTYRENE)
4. ALL DIMENSIONS ARE IN MILLIMETERS (UNLESS OTHERWISE SPECIFIED)
5. A0 AND B0 MEASURED ON A PLANE 0.3mm ABOVE THE BOTTOM OF THE POCKET
6. K0 MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE OF THE CARRIER
7. POCKET POSITION RELATIVE TO SPROCKET HOLE MEASURED AS TRUE POSITION OF POCKET, NOT POCKET HOLE
8. SURFACE RESISTIVITY
1X10E4~1X10E11 OHMS/SQ.

A0=6.5±0.1
B0=5.3±0.1
K0=1.4±0.1

DFN5x6 Dimension



Marking:



8-Lead DFN5x6 Plastic Package

Date Code(counting from left to right) :

1st code: year code, the last digit of Christian year

2nd code : 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

3rd and 4th codes : production serial number, 01~99

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043	e	1.270	BSC	0.050	BSC
b	0.330	0.510	0.013	0.020	H	0.410	0.610	0.016	0.024
C	0.200	0.300	0.008	0.012	K	1.100	-	0.043	-
D1	4.800	5.000	0.189	0.197	L	0.510	0.710	0.020	0.028
D2	3.610	3.960	0.142	0.156	L1	0.060	0.200	0.002	0.008
E	5.900	6.100	0.232	0.240	M	0.500	-	0.020	-
E1	5.700	5.800	0.224	0.228	α	0°	12°	0°	12°
E2	3.380	3.780	0.133	0.149					