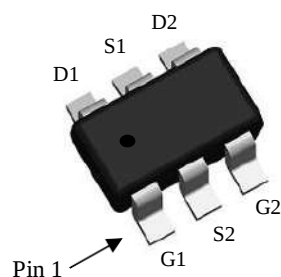


N- AND P-Channel Enhancement Mode MOSFET

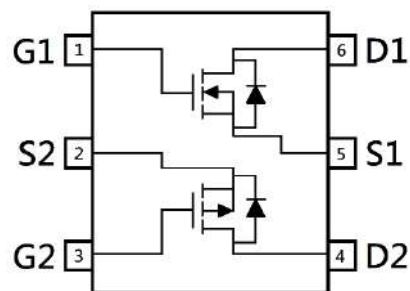
Features:

- Low On Resistance
- Low Gate Charge
- Fast Switching Characteristic

TSOP-6



	N-CH	P-CH
BV_{DSS}	30V	-30V
$I_D @ V_{GS}=(-)10V, T_A=25^\circ C$	4.6A	-3.5A
$R_{DS(ON) typ. @ V_{GS}=(-)10V}$	19 m Ω	41m Ω
$R_{DS(ON) typ. @ V_{GS}=(-)4.5V}$	25m Ω	57m Ω



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KT8958	TSOP-6 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (T_A=25°C)

Parameter		Symbol	Limits		Unit
			N-CH	P-CH	
Drain-Source Voltage		V _{DS}	30	-30	V
Gate-Source Voltage		V _{GS}	±20	±20	
Continuous Drain Current @ V _{GS} =(-)10V, T _A =25°C		I _D	4.6	-3.5	A
Continuous Drain Current @ V _{GS} =(-)10V, T _A =70°C			3.7	-2.8	
Pulsed Drain Current		I _{DM}	18	14	
Continuous Body Diode Forward Current @ T _A =25°C		I _S	0.9	-0.9	
Avalanche Current @ L=0.1mH		I _{AS}	10	-9	
Avalanche Energy @ L=0.5mH		E _{AS}	9	6.3	mJ
Total Power Dissipation	T _A =25°C	P _D	1.1		W
	T _A =70°C		0.7		
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55~+150		°C

Thermal Data

Parameter	Symbol	Steady State	Unit
Thermal Resistance, Junction-to-ambient	R _{θJA}	113	°C/W

Note:

*a. 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 power dissipation P_D is based on R_{θJA} and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

*b. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

N-Channel Electrical Characteristics (T_A=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
G _{FS}	-	5.4	-	S	V _{DS} =10V, I _D =3A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =24V, V _{GS} =0V
R _{DS(ON)}	-	19	25	mΩ	V _{GS} =10V, I _D =4A
	-	25	35		V _{GS} =4.5V, I _D =3A
Dynamic					
C _{iss}	-	510	-	pF	V _{DS} =15V, V _{GS} =0V, f=1MHz
C _{oss}	-	75	-		
C _{rss}	-	58	-		
R _g	-	4.5	-	Ω	f=1MHz
Q _g *1, 2	-	13	-	nC	V _{DS} =15V, I _D =6A, V _{GS} =10V
Q _{gs} *1, 2	-	1.6	-		
Q _{gd} *1, 2	-	2.5	-		
t _{d(ON)} *1, 2	-	5.6	-	ns	V _{DS} =15V, I _D =6A, V _{GS} =10V, R _{GS} =1Ω
t _r *1, 2	-	7.5	-		
t _{d(OFF)} *1, 2	-	26	-		
t _f *1, 2	-	4.5	-		
Source-Drain Diode					
V _{SD} *1	-	0.85	1.2	V	I _S =6A, V _{GS} =0V
t _{rr}	-	7	-	ns	I _F =6A, dI _F /dt=100A/μs
Q _{rr}	-	3	-	nC	

Note:

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

*2. Independent of operating temperature

P-Channel Electrical Characteristics (T_A=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
G _{FS}	-	5.4	-	S	V _{DS} =-10V, I _D =-5A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	-1	μA	V _{DS} =-24V, V _{GS} =0V
R _{DS(ON)}	-	41	54	mΩ	V _{GS} =-10V, I _D =-3A
	-	57	80		V _{GS} =-4.5V, I _D =-2A
Dynamic					
C _{iss}	-	640	-	pF	V _{DS} =-15V, V _{GS} =0V, f=1MHz
C _{oss}	-	75	-		
C _{rss}	-	65	-		
R _g	-	25	-	Ω	f=1MHz
Q _g *1, 2	-	14	-	nC	V _{DS} =-15V, I _D =-5A, V _{GS} =-10V
Q _{gs} *1, 2	-	2	-		
Q _{gd} *1, 2	-	3	-		
t _{d(ON)} *1, 2	-	6	-	ns	V _{DS} =-15V, I _D =-5A, V _{GS} =-10V, R _{GS} =1Ω
t _r *1, 2	-	18	-		
t _{d(OFF)} *1, 2	-	50	-		
t _f *1, 2	-	16	-		
Source-Drain Diode					
V _{SD} *1	-	-0.8	-1.2	V	I _S =-1.7A, V _{GS} =0V
t _{rr}	-	7.7	-	ns	I _F =-1.7A, dI _F /dt=100A/μs
Q _{rr}	-	2.9	-	nC	

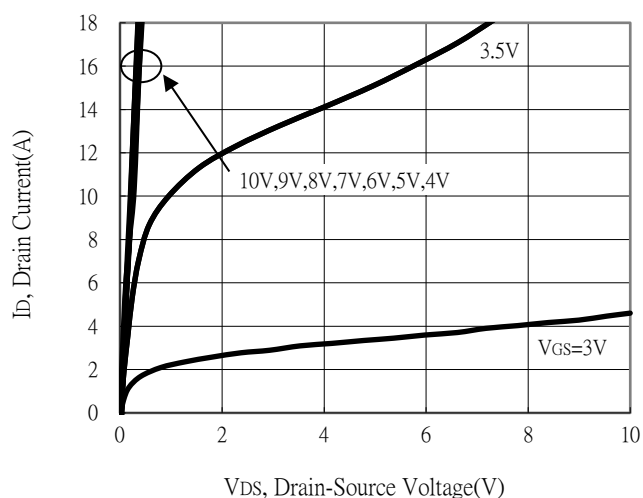
Note:

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

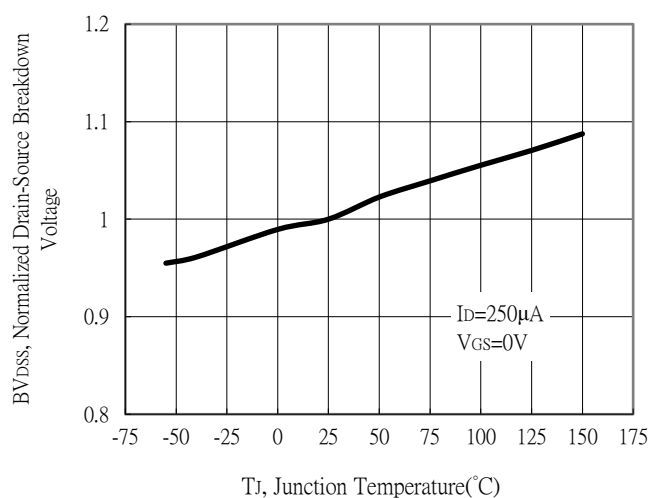
*2. Independent of operating temperature

Typical Characteristics : Q1(N-channel)

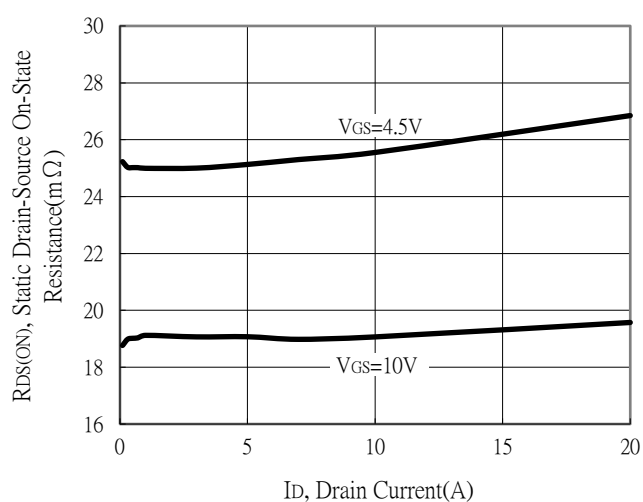
Typical Output Characteristics



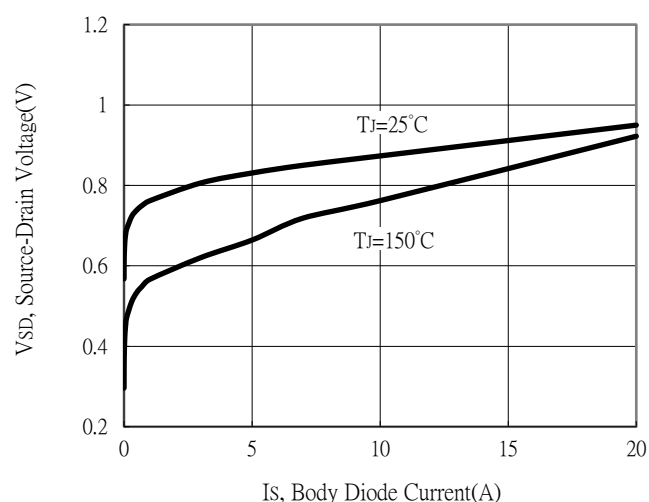
Breakdown Voltage vs Ambient Temperature



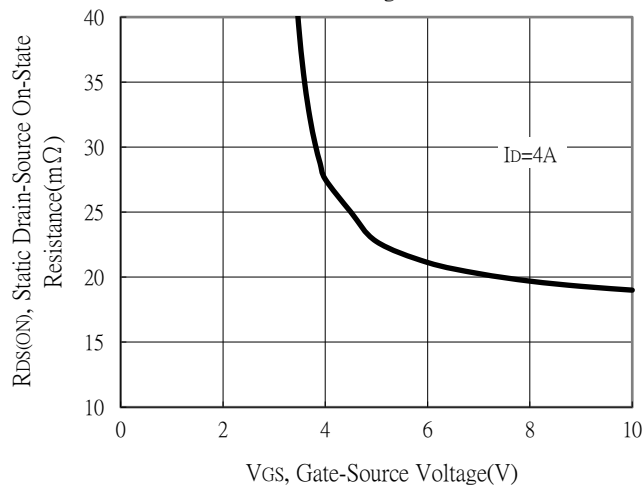
Static Drain-Source On-State resistance vs Drain Current



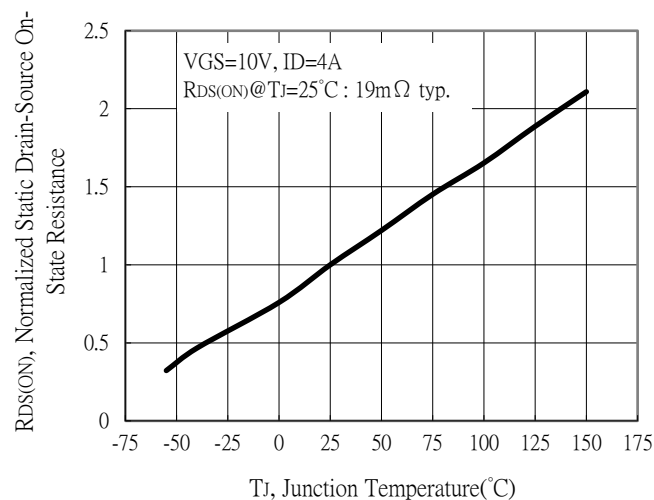
Body Diode Current vs Source-Drain Voltage



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

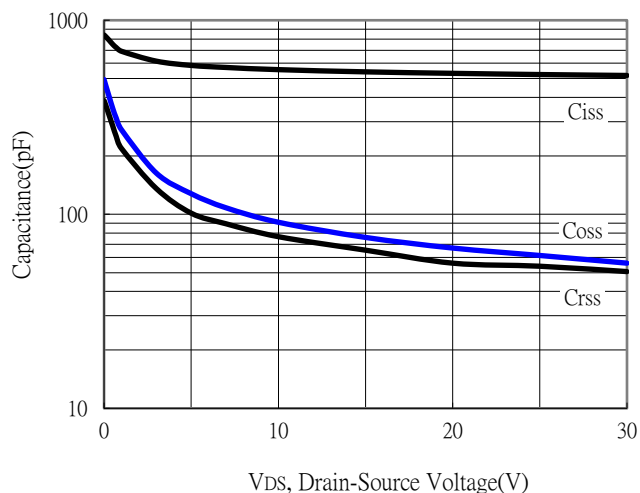


Drain-Source On-State Resistance vs Junction Temperature

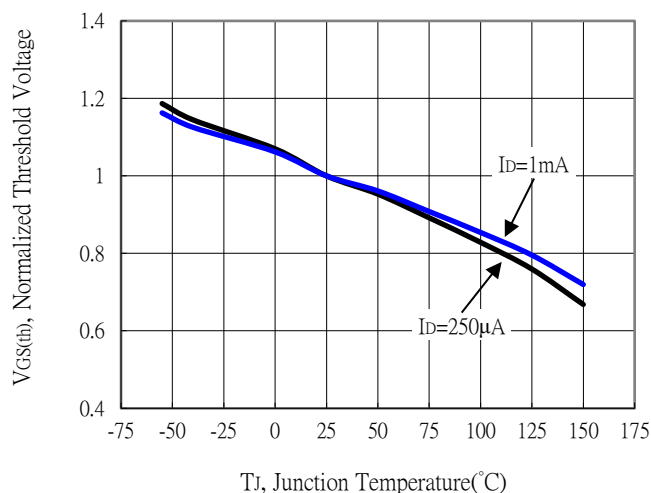


Typical Characteristics (Cont.) : Q1(N-channel)

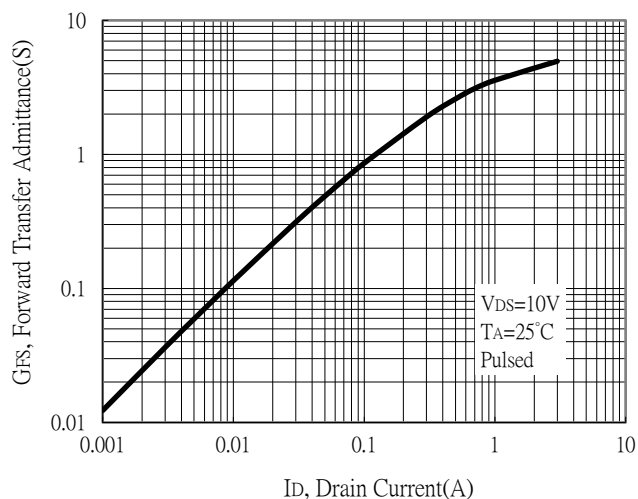
Capacitance vs Drain-to-Source Voltage



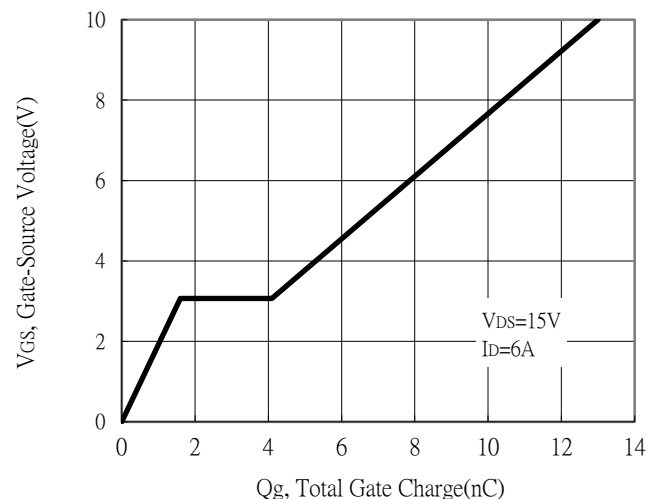
Threshold Voltage vs Junction Temperature



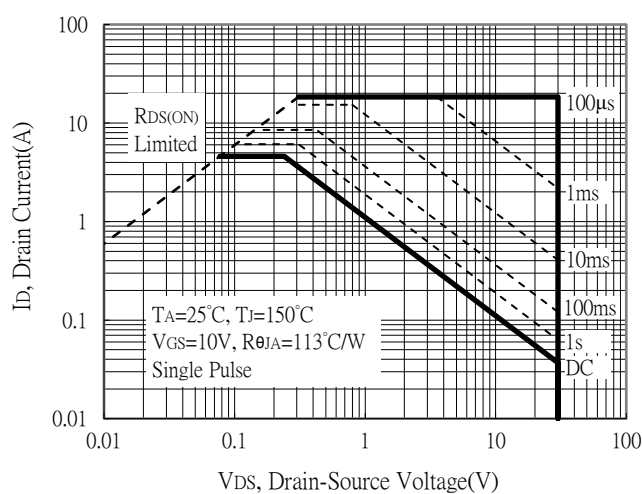
Forward Transfer Admittance vs Drain Current



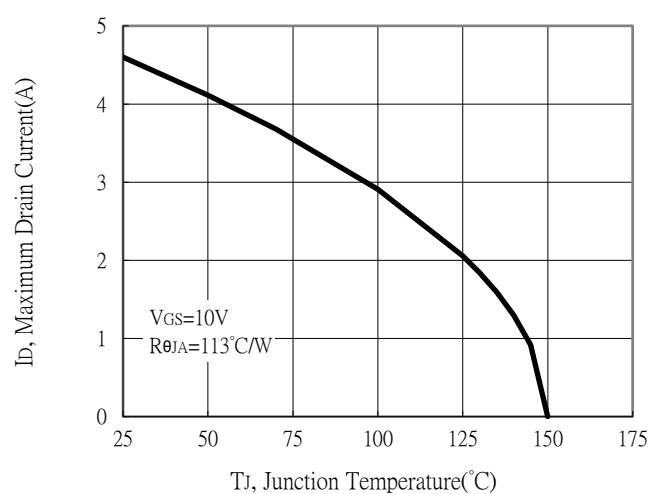
Gate Charge Characteristics



Maximum Safe Operating Area

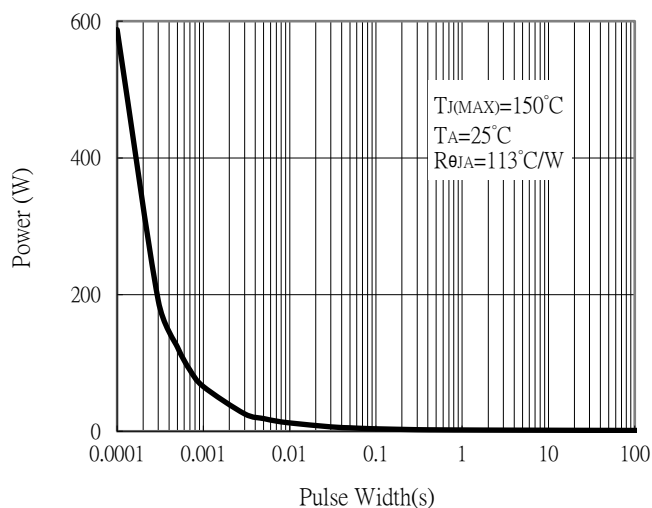


Maximum Drain Current vs Junction Temperature

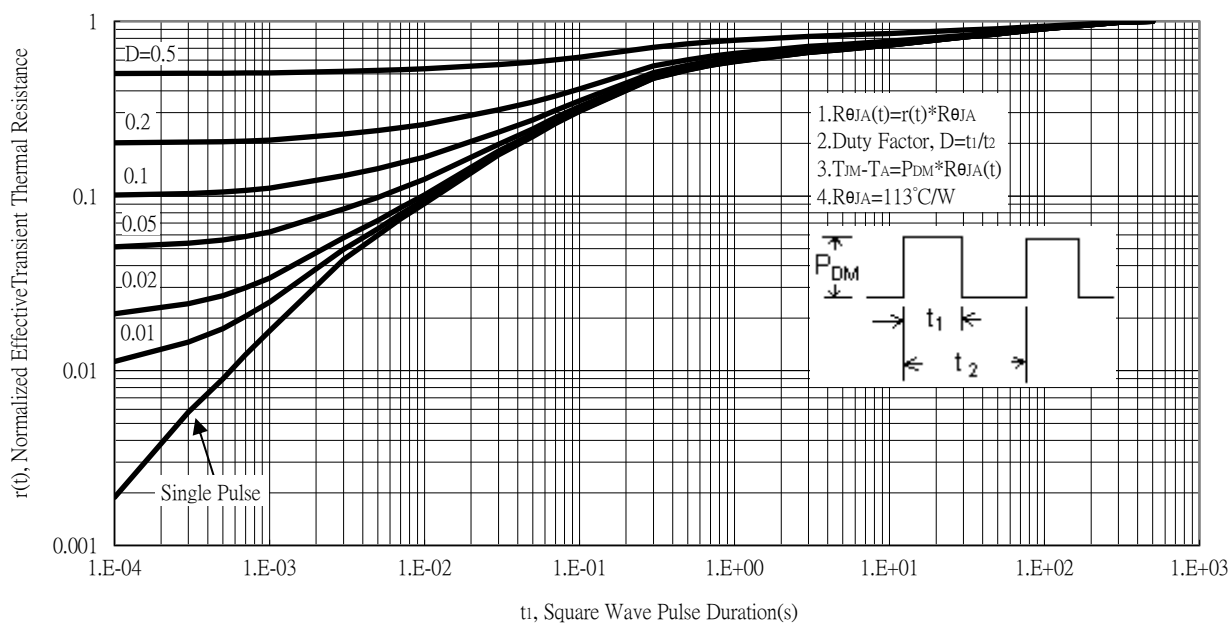


Typical Characteristics (Cont.) : Q1(N-channel)

Single Pulse Power Rating, Junction to Ambient

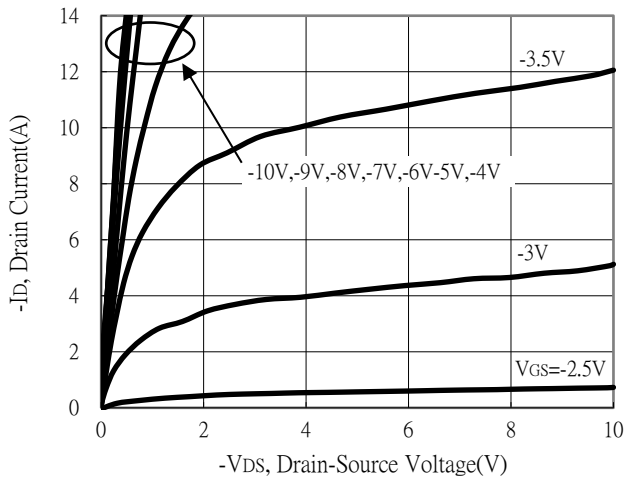


Transient Thermal Response Curves

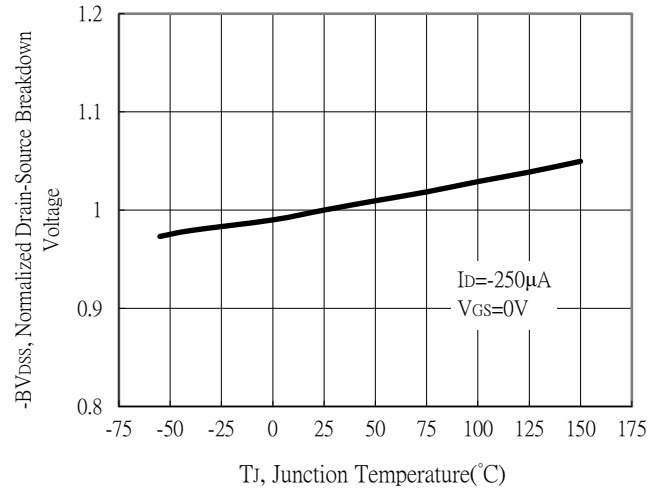


Typical Characteristics : Q2(P-channel)

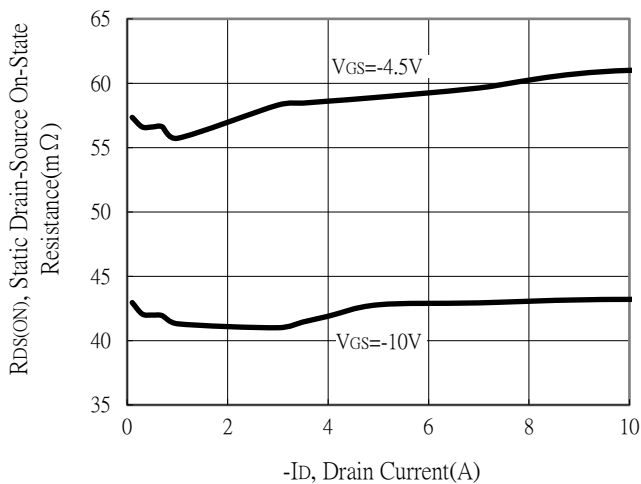
Typical Output Characteristics



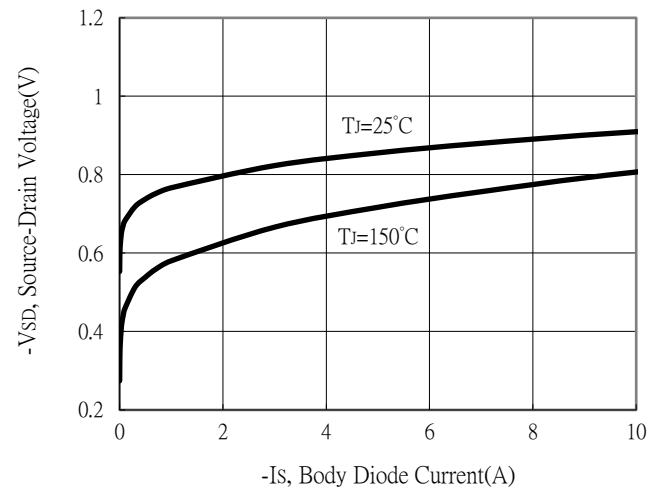
Breakdown Voltage vs Ambient Temperature



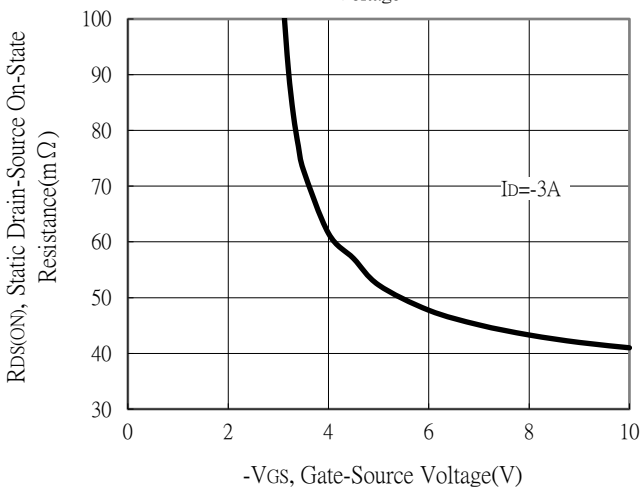
Static Drain-Source On-State resistance vs Drain Current



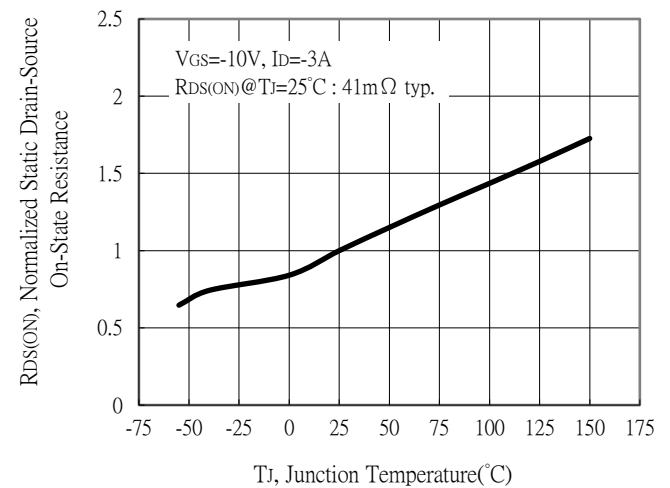
Body Diode Current vs Source-Drain Voltage



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

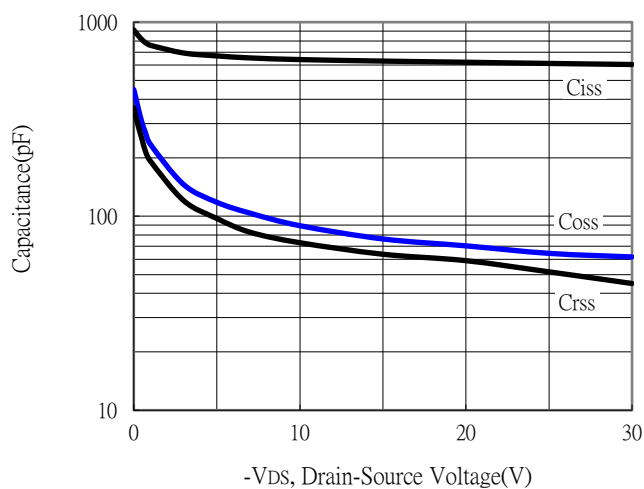


Drain-Source On-State Resistance vs Junction Temperature

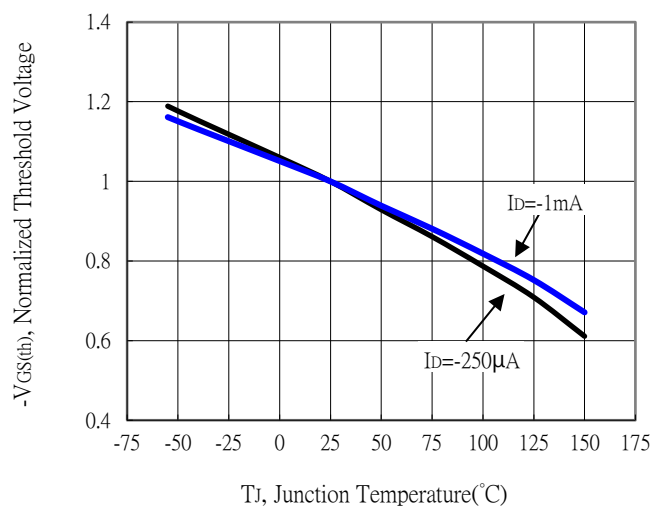


Typical Characteristics (Cont.) : Q2(P-channel)

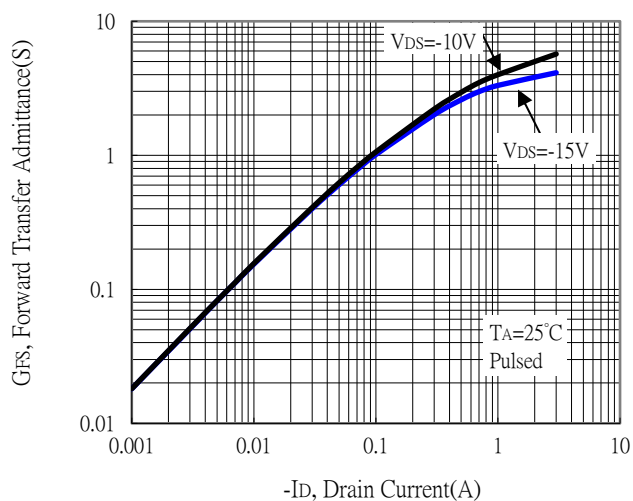
Capacitance vs Drain-to-Source Voltage



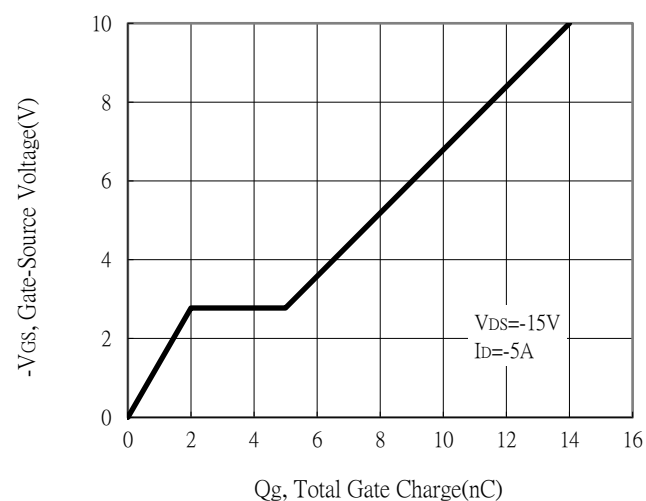
Threshold Voltage vs Junction Temperature



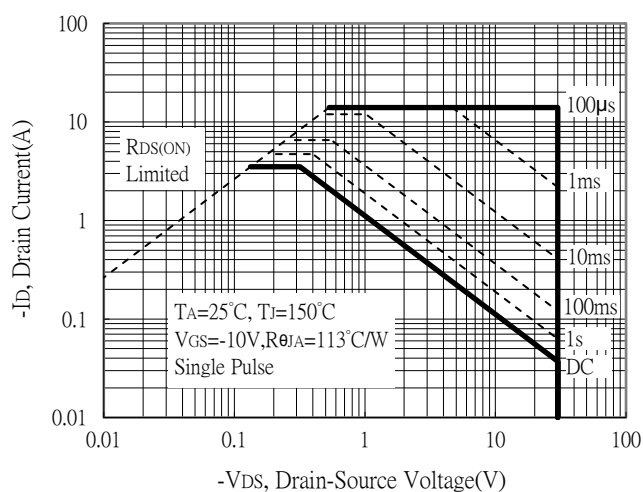
Forward Transfer Admittance vs Drain Current



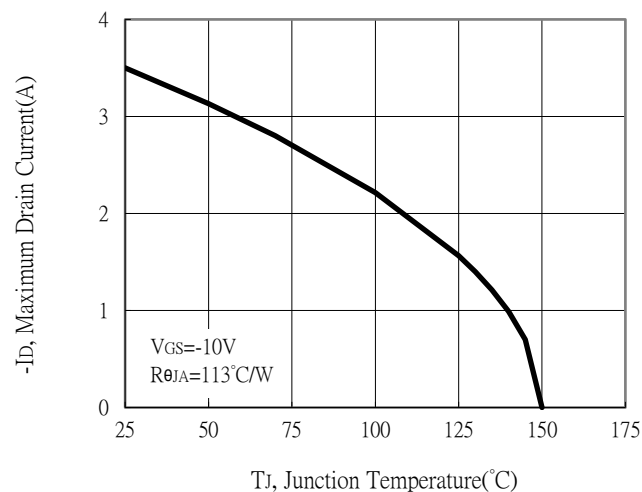
Gate Charge Characteristics



Maximum Safe Operating Area

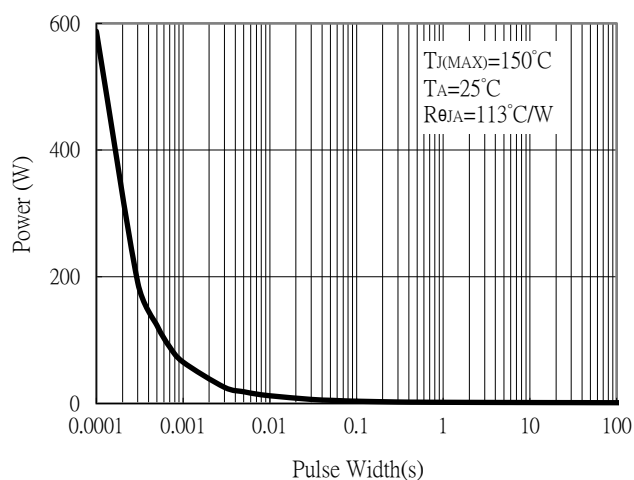


Maximum Drain Current vs Junction Temperature

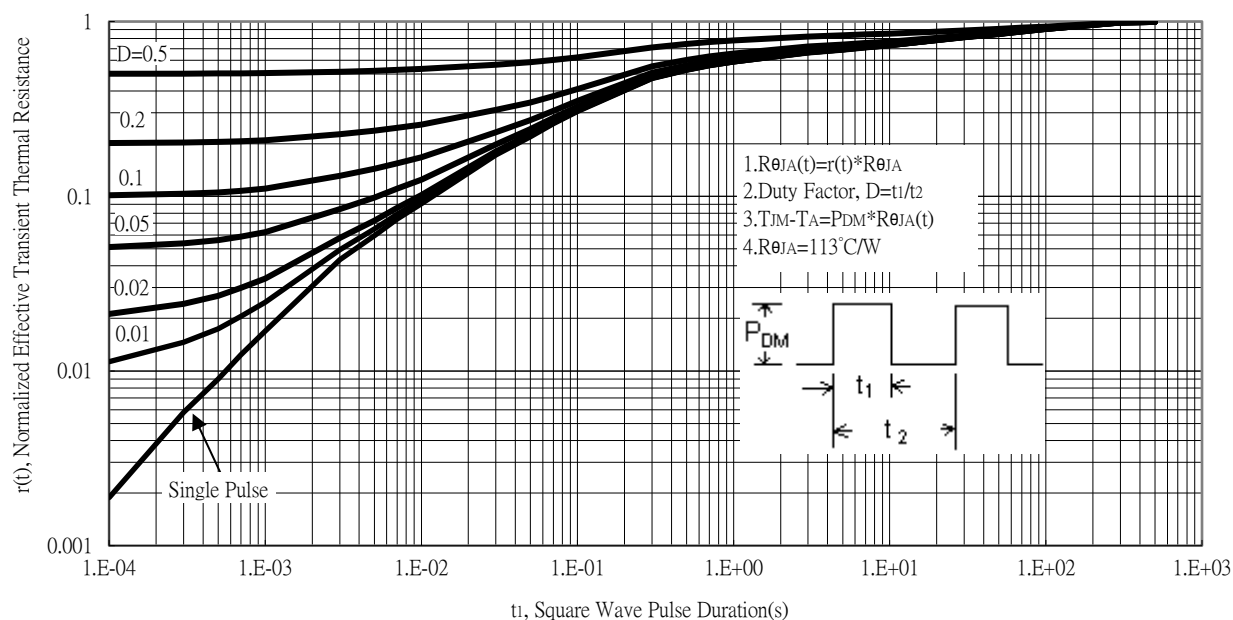


Typical Characteristics (Cont.) : Q2(P-channel)

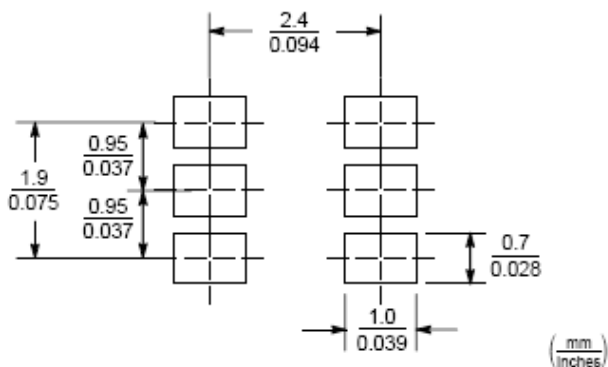
Single Pulse Power Rating, Junction to Ambient



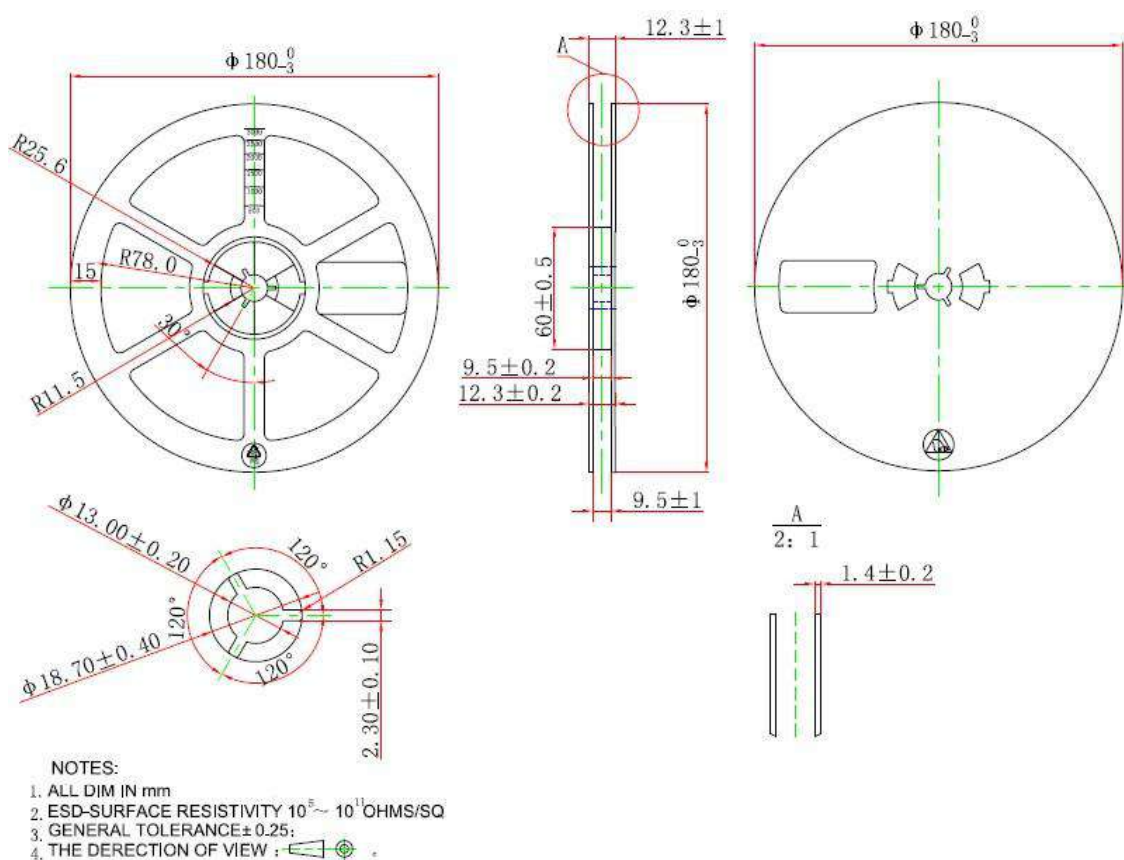
Transient Thermal Response Curves



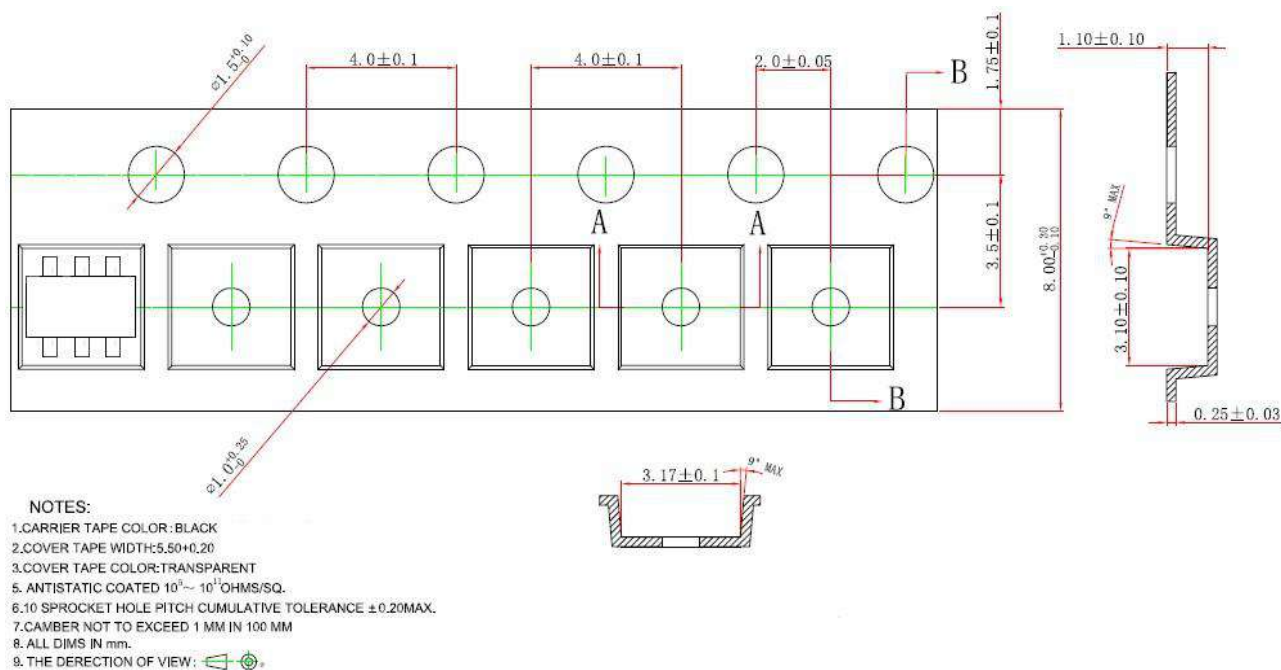
Recommended Soldering Footprint



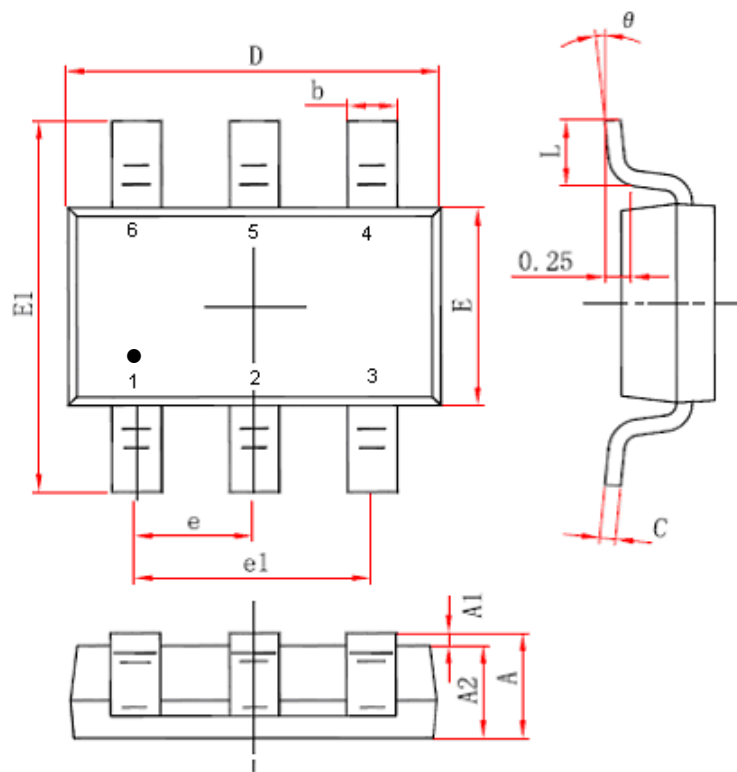
Reel Dimension



Carrier Tape Dimension

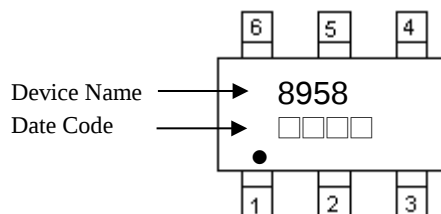


TSOP-6 Dimension



6-Lead TSOP-6 Plastic
Surface Mounted Package

Marking:



Style:

- Pin 1. Gate (G1)
- Pin 2. Source (S2)
- Pin 3. Gate (G2)
- Pin 4. Drain (D2)
- Pin 5. Source (S1)
- Pin 6. Drain (D1)

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	0.700	0.900	0.028	0.035	E	1.600	1.700	0.063	0.067
A1	0.000	0.100	0.000	0.004	E1	2.650	2.950	0.104	0.116
A2	0.700	0.800	0.028	0.031	e	0.95 BSC		0.037 BSC	
b	0.350	0.500	0.014	0.020	e1	1.90 BSC		0.075 BSC	
c	0.080	0.200	0.003	0.008	L	0.300	0.600	0.012	0.024
D	2.820	3.020	0.111	0.119	θ	0°	8°	0°	8°