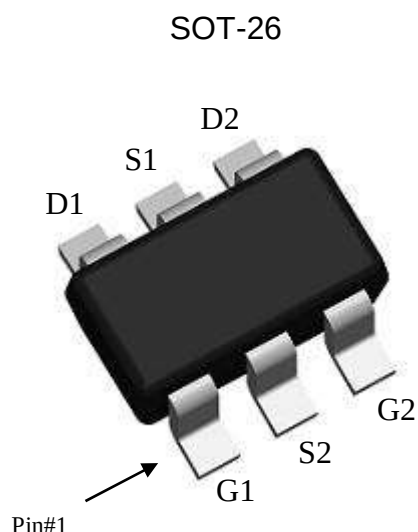


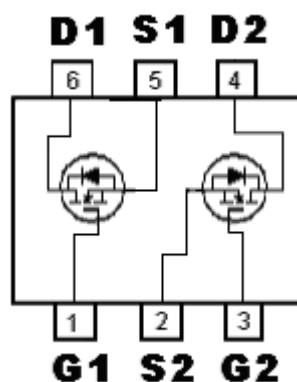
Dual N-Channel Enhancement Mode MOSFET

Features:

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



BV _{DSS}	20V
I _D @ T _A =25 °C	5.8A (V _{GS} =4.5V, T _A =25°C)
R _{DS(on)} (TYP.)	16.3mΩ (V _{GS} =4.5V, I _D =3.4A)
	23.1mΩ (V _{GS} =2.5V, I _D =3A)



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KWA020A02	SOT-26 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	20	V
Gate-Source Voltage	V _{GS}	±8	
Continuous Drain Current @T _A =25 °C (Note 1)	I _D	5.8	A
Continuous Drain Current @T _A =70 °C (Note 1)		4.6	
Pulsed Drain Current (Note 2)	I _{DM}	24	
Total Power Dissipation (Note 1)	P _D	1.14	W
Linear Derating Factor		0.01	W / °C
Operating Junction and Storage Temperature	T _j , T _{stg}	-55~+150	°C

Note : 1.Surface mounted on 1 in² copper pad of FR-4 board, t≤5 sec.
2.Pulse width limited by maximum junction temperature.

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	65	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{θJA}	110 (Note)	

Note : Surface mounted on 1 in² copper pad of FR-4 board, t≤5 sec; 180°C/W when mounted on minimum copper pad

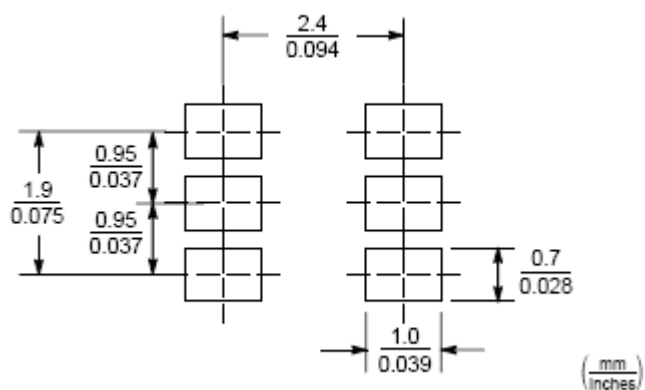
Electrical Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	20	-	-	V	V _{GS} =0V, I _D =250μA
ΔBV _{DSS} /ΔT _j	-	15	-	mV/°C	Reference to 25°C, I _D =1mA
V _{GS(th)}	0.4	-	1.3	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±8V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =16V, V _{GS} =0V
	-	-	10		V _{DS} =16V, V _{GS} =0V, T _j =70°C
*R _{DS(ON)}	-	16.3	25	mΩ	V _{GS} =4.5V, I _D =3.4A
	-	23.1	35		V _{GS} =2.5V, I _D =3A
*G _{FS}	-	7.6	-	S	V _{DS} =10V, I _D =3A
Dynamic					
C _{iss}	-	804	-	pF	V _{DS} =10V, V _{GS} =0V, f=1MHz
C _{oss}	-	99	-		
C _{rss}	-	87	-		
*t _{d(ON)}	-	8.8	-	ns	V _{DS} =10V, I _D =1A, V _{GS} =4.5V, R _G =10Ω
*t _r	-	21.8	-		
*t _{d(OFF)}	-	59.4	-		
*t _f	-	27	-		

*Qg	-	10	-	nC	V _{DS} =10V, I _D =3A, V _{GS} =4.5V
*Qgs	-	1.3	-		
*Qgd	-	2.9	-		
Rg	-	1.2	-	Ω	f=1MHz
Source-Drain Diode					
*V _{SD}	-	0.83	1.2	V	V _{GS} =0V, I _S =2.7A
*trr	-	8.3	-	ns	I _F =1A, V _{GS} =0V, dI _F /dt=100A/μs
*Qrr	-	3.1	-	nC	

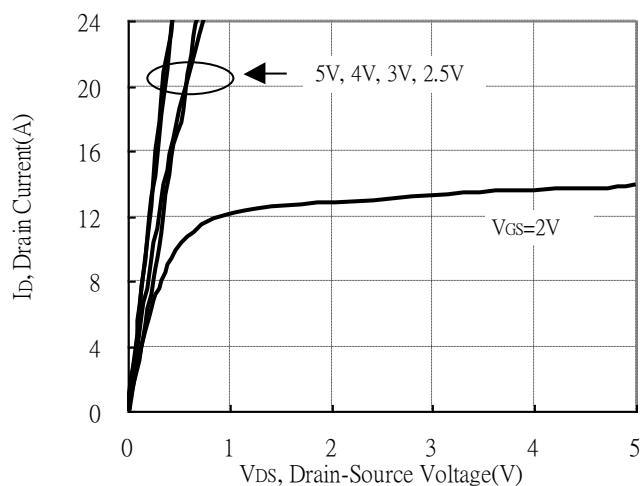
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Recommended Soldering Footprint

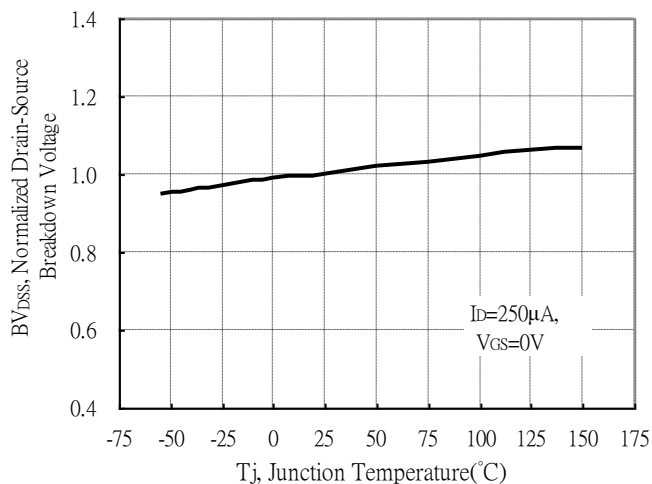


Typical Characteristics

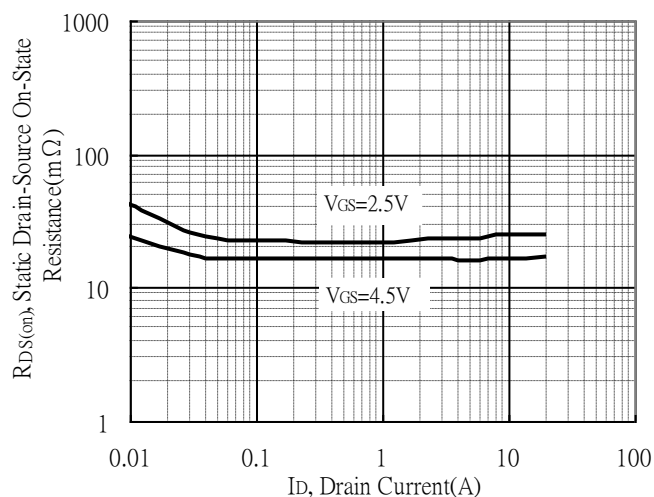
Typical Output Characteristics



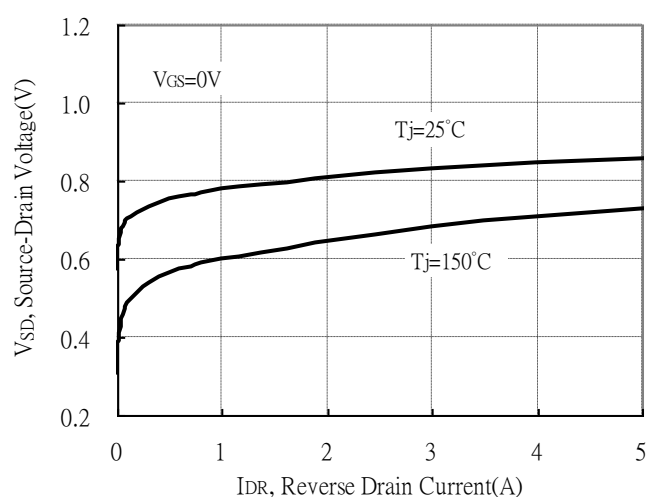
Breakdown Voltage vs Ambient Temperature



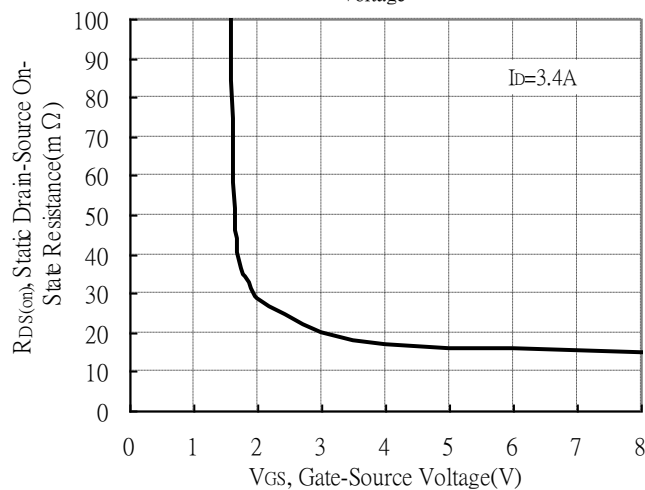
Static Drain-Source On-State resistance vs Drain Current



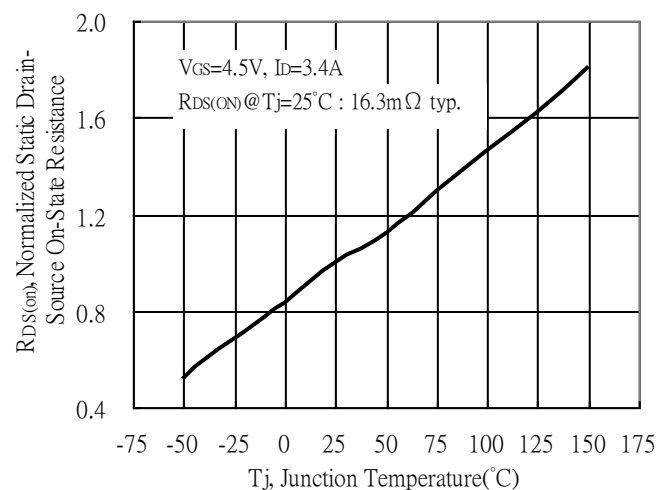
Reverse Drain Current vs Source-Drain Voltage



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

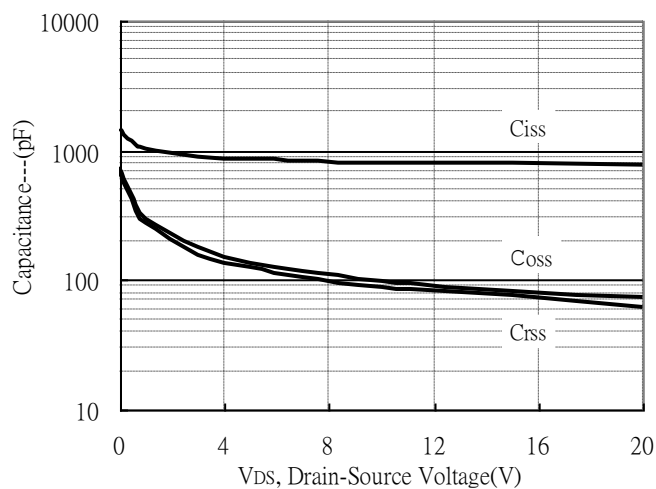


Drain-Source On-State Resistance vs Junction Temperature

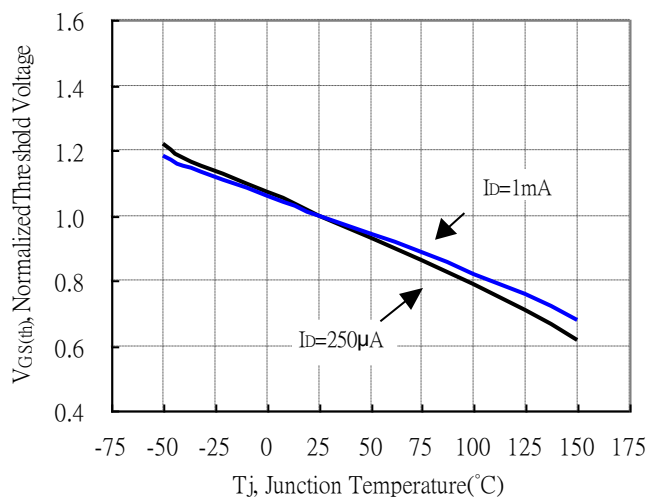


Typical Characteristics(Cont.)

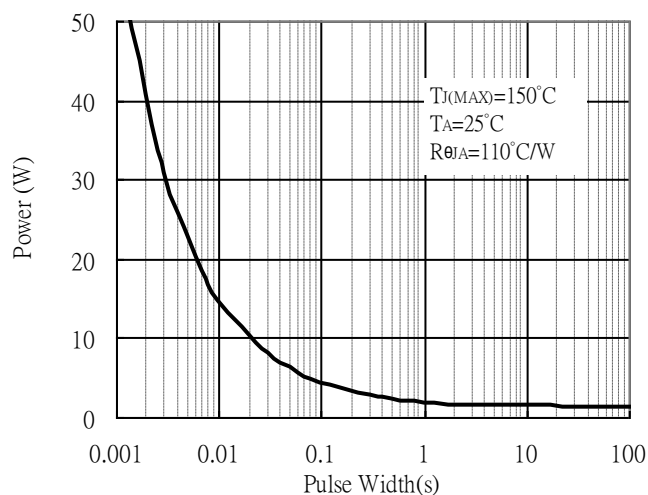
Capacitance vs Drain-to-Source Voltage



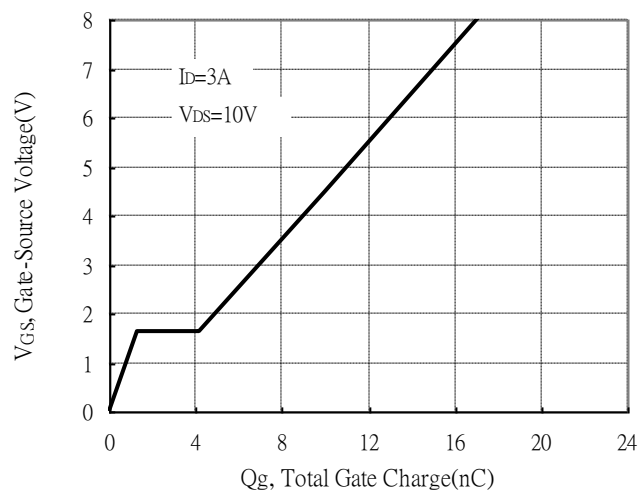
Threshold Voltage vs Junction Temperature



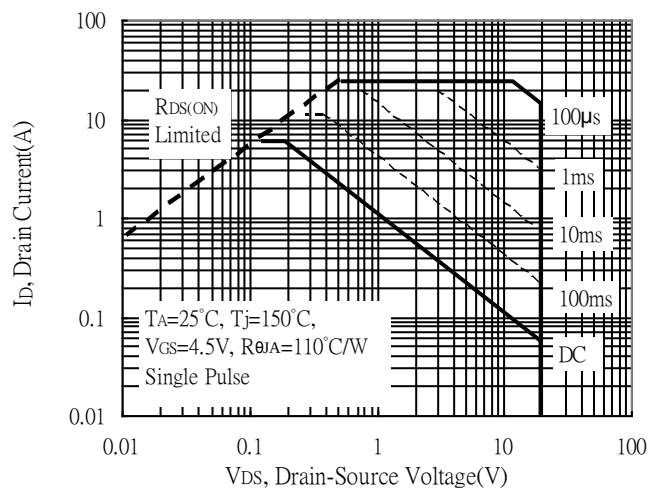
Single Pulse Power Rating, Junction to Ambient



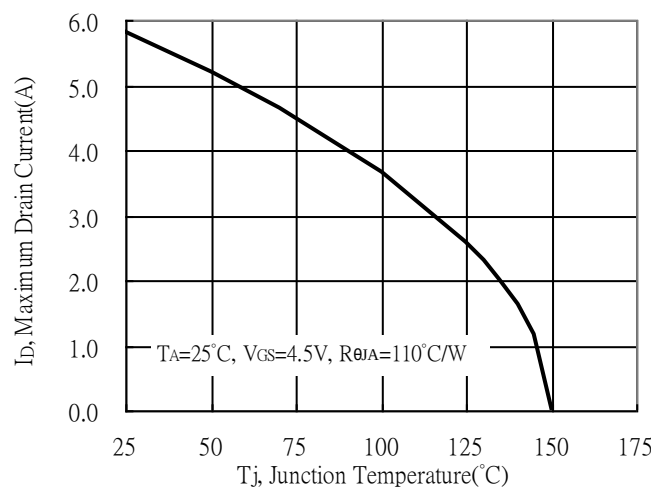
Gate Charge Characteristics



Maximum Safe Operating Area

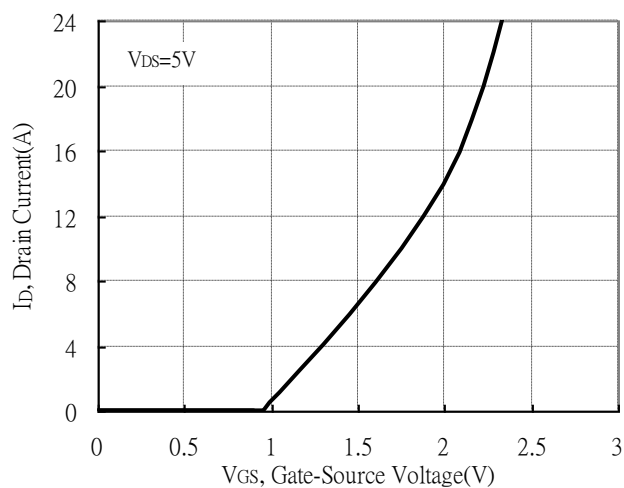


Maximum Drain Current vs Junction Temperature

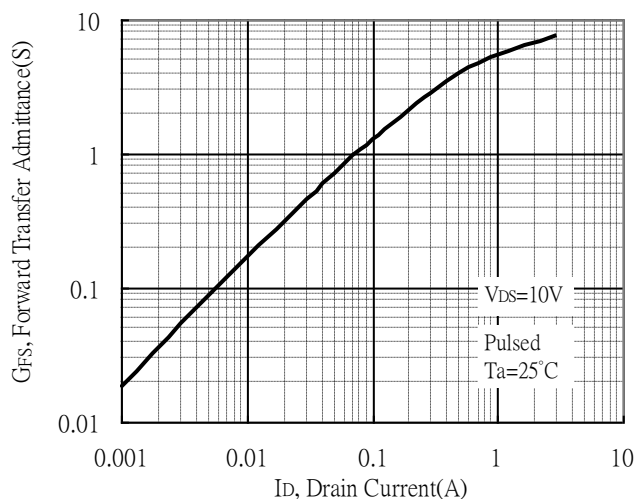


Typical Characteristics(Cont.)

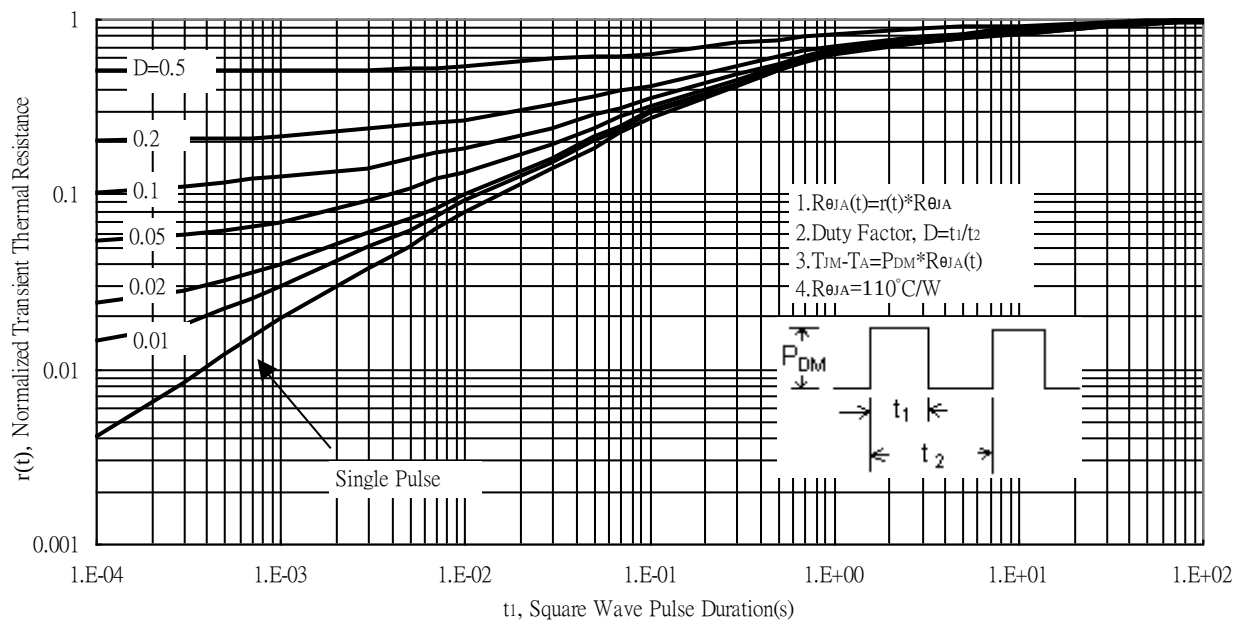
Typical Transfer Characteristics



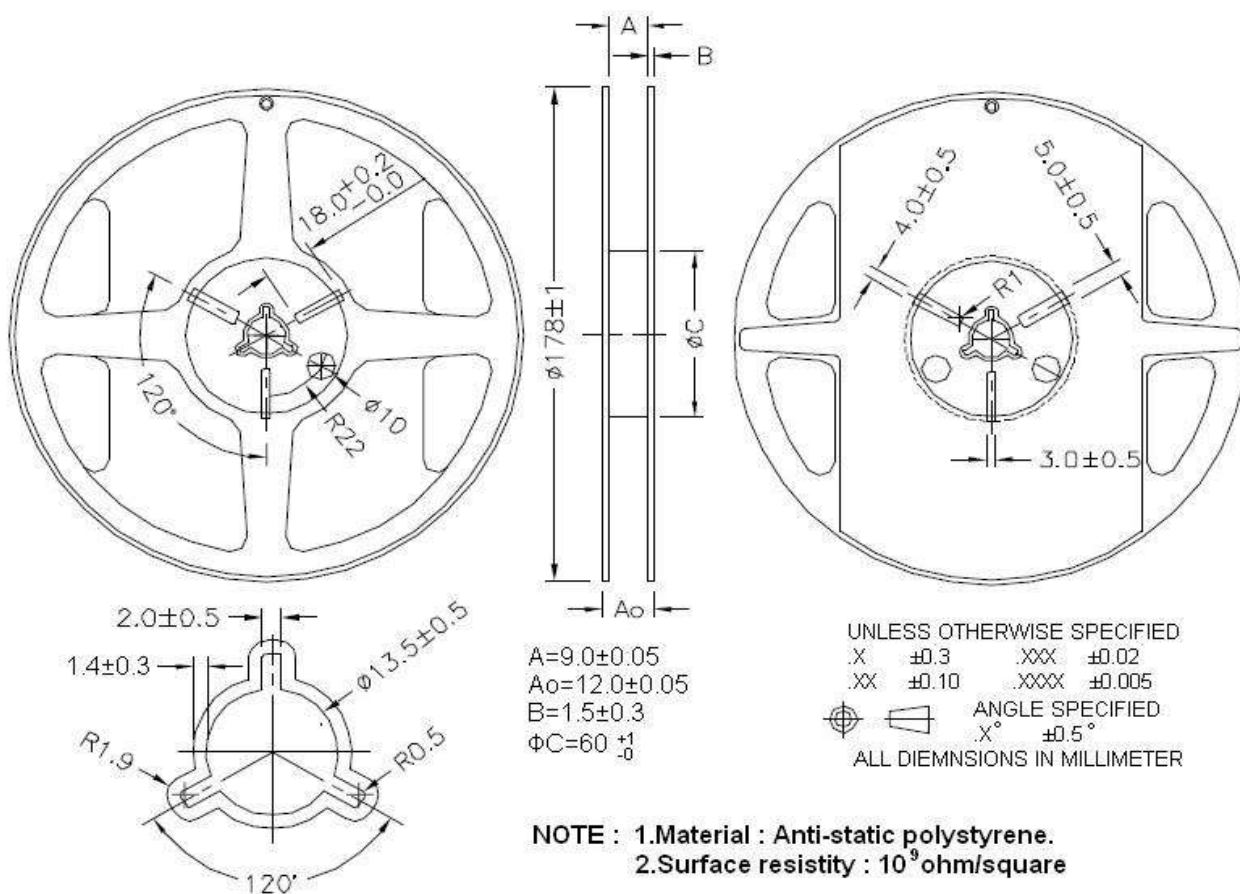
Forward Transfer Admittance vs Drain Current



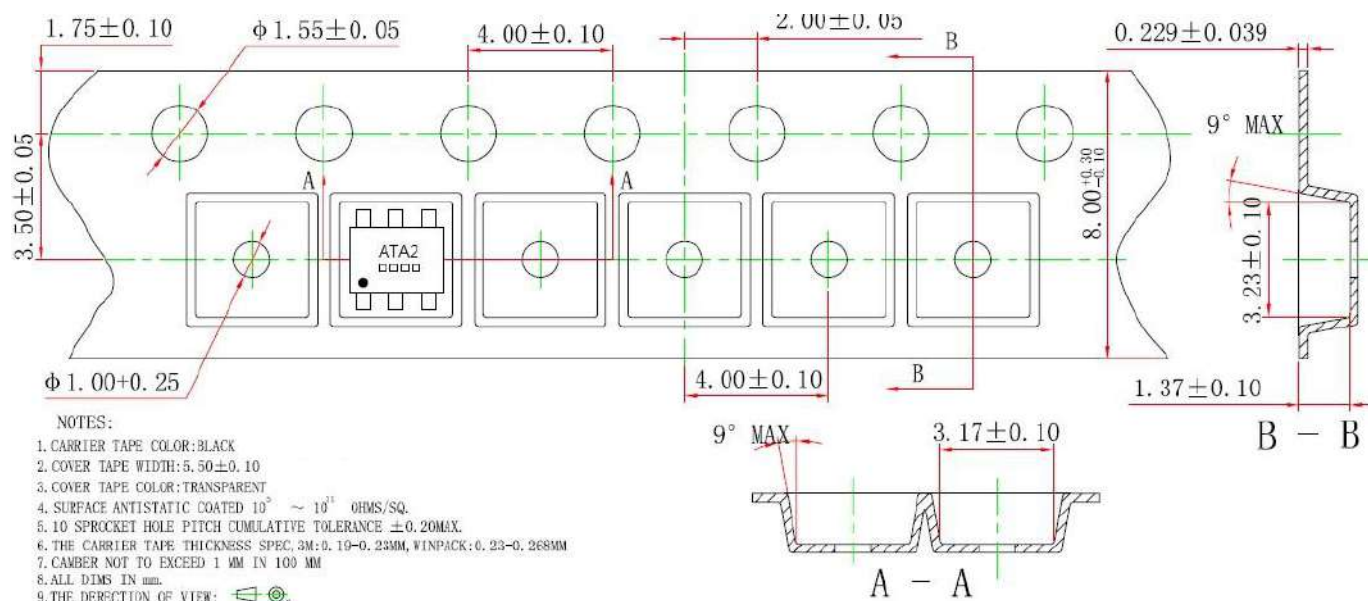
Transient Thermal Response Curves



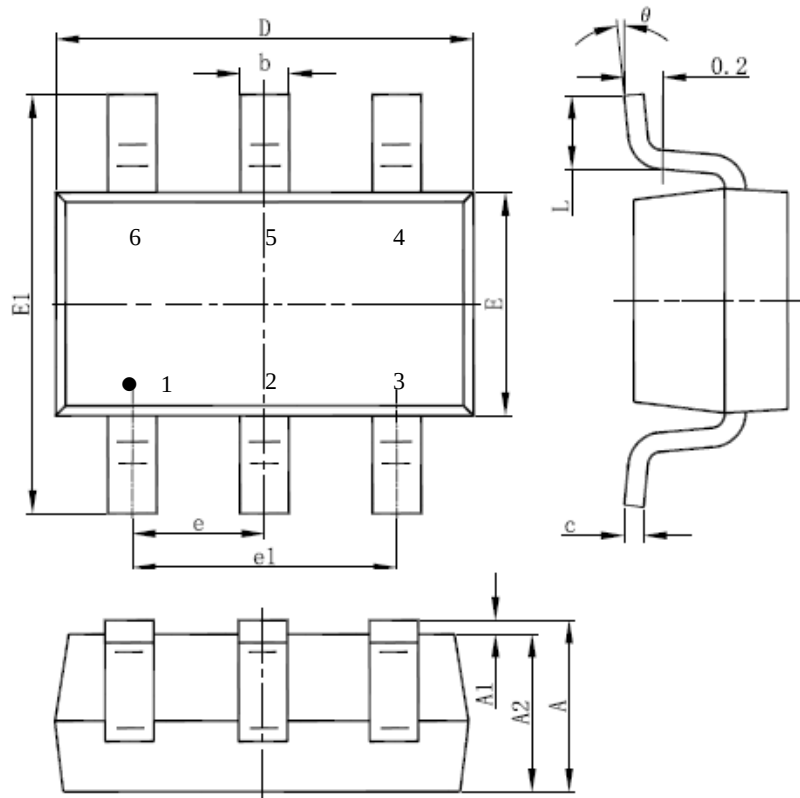
Reel Dimension



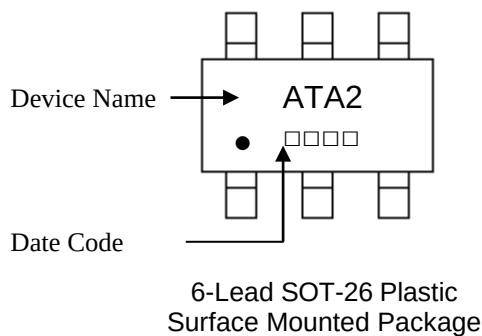
Carrier Tape Dimension



SOT-26 Dimension



Marking:



Style:

- Pin 1. Gate1 (G1)
- Pin 2. Source 2 (S2)
- Pin 3. Gate 2 (G2)
- Pin 4. Drain 2 (D2)
- Pin 5. Source 1 (S1)
- Pin 6. Drain 1 (D1)

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049	E	1.500	1.700	0.059	0.067
A1	0.000	0.100	0.000	0.004	E1	2.650	2.950	0.104	0.116
A2	1.050	1.150	0.041	0.045	e	0.950 (BSC)		0.037 (BSC)	
b	0.300	0.500	0.012	0.020	e1	1.800	2.000	0.071	0.079
c	0.100	0.200	0.004	0.008	L	0.300	0.600	0.012	0.024
D	2.820	3.020	0.111	0.119	theta	0°	8°	0°	8°