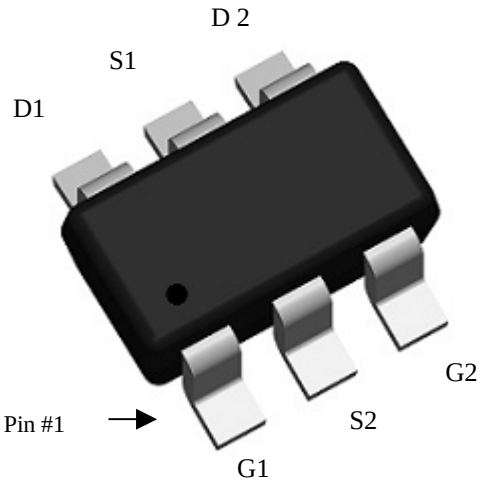
N- AND P-Channel Enhancement Mode MOSFET

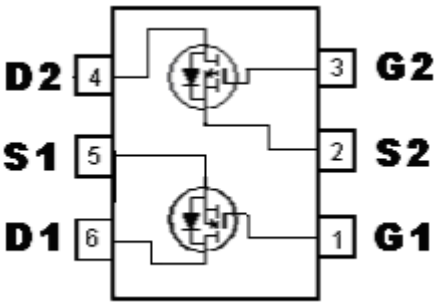
Features:

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

TSOP-6



	N-CH	P-CH
BV_{DSS}	20V	-20V
I_D	4.5A(V_{GS}=4.5V)	-3A(V_{GS}=-4.5 V)
R_{DSON} (TYP.)	24mΩ (V_{GS}=4.5V)	56mΩ (V_{GS}=-4.5V)
	28mΩ (V_{GS}=2.5V)	71mΩ (V_{GS}=-2.5V)
	69mΩ (V_{GS}=1.5V)	125mΩ (V_{GS}=-1.5V)



G：Gate S：Source D：Drain

Ordering Information

Device	Package	Shipping
KW3585G6	TSOP-6 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit
		N-channel	P-channel	
Drain-Source Breakdown Voltage	BV_{DSS}	20	-20	V
Gate-Source Voltage	V_{GS}	±12	±12	
Continuous Drain Current @T_A=25 °C (Note 1)	I_D	4.5	-3	A
Continuous Drain Current @T_A=70 °C (Note 1)		3.6	-2.4	
Pulsed Drain Current (Note 2)	I_{DM}	20	-20	
Total Power Dissipation (Note 1)	Pd	1.14		W
Linear Derating Factor		0.01		W / °C
Operating Junction and Storage Temperature	Tj, Tstg	-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	$R_{\theta JC}$	80	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{\theta JA}$	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

N-Channel 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
$\Delta BV_{DSS}/\Delta Tj$	-	0.02	-	V/°C	Reference to 25°C, I_D=1mA
$V_{GS(th)}$	0.5	0.7	1.2	V	V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±12V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS}=20V, V_{GS}=0V
	-	-	10		V_{DS}=16V, V_{GS}=0V, Tj=70°C
*$R_{DS(ON)}$	-	24	35	mΩ	I_D=3.5A, V_{GS}=4.5V
	-	28	50		I_D=1.2A, V_{GS}=2.5V
	-	69	105		I_D=0.5A, V_{GS}=1.5V
*G_{FS}	-	7	-	S	V_{DS}=5V, I_D=3A
Dynamic					
Ciss	-	406	-	pF	V_{DS}=20V, V_{GS}=0V, f=1MHz
Coss	-	47	-		
Crss	-	37	-		
*$t_{d(ON)}$	-	4	-	ns	V_{DS}=15V, I_D=1A, V_{GS}=5V, R_G=3.3Ω , R_D=15Ω
*t_r	-	15.2	-		
*$t_{d(OFF)}$	-	28.2	-		
*t_f	-	5	-		

*Qg	-	7	-	nC	V_{DS}=16V, I_D=3A, V_{GS}=4.5V
*Qgs	-	0.7	-		
*Qgd	-	1.9	-		
Source-Drain Diode					
*V_{SD}	-	0.79	1.2	V	V_{GS}=0V, I_S=1.2A
*trr	-	5.4	-	ns	I_F=3A, V_{GS}=0V, dI_F/dt=100A/μs
*Qrr	-	2	-	nC	

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

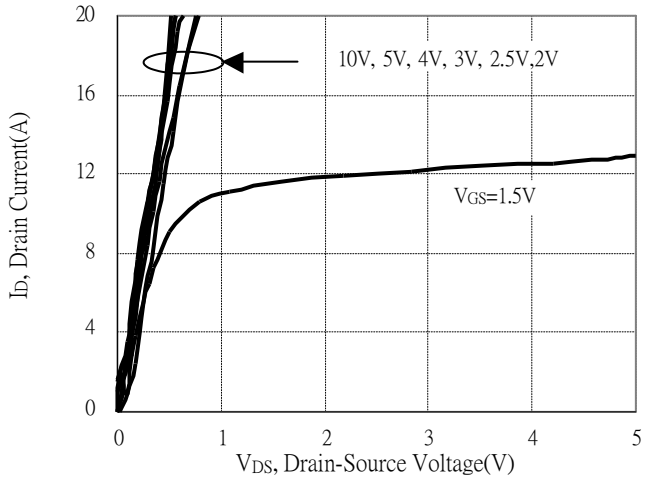
P-Channel Electrical Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-20	-	-	V	V_{GS}=0V, I_D=-250μA
$\Delta BV_{DSS}/\Delta Tj$	-	-0.01	-	V/°C	Reference to 25°C, I_D=-1mA
$V_{GS(th)}$	-0.4	-0.8	-1.2	V	V_{DS}=V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±12V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS}=-20V, V_{GS}=0V
	-	-	-25		V_{DS}=-16V, V_{GS}=0V, Tj=70°C
*$R_{DS(ON)}$	-	56	80	mΩ	I_D=-2.5A, V_{GS}=-4.5V
	-	71	130		I_D=-2A, V_{GS}=-2.5V
	-	125	350		I_D=-0.5A, V_{GS}=-1.5V
*G_{FS}	-	6	-	S	V_{DS}=-5V, I_D=-2A
Dynamic					
Ciss	-	597	-	pF	V_{DS}=-20V, V_{GS}=0V, f=1MHz
Coss	-	54	-		
Crss	-	40	-		
*$t_{d(ON)}$	-	4	-	ns	V_{DS}=-10V, I_D=-1A, V_{GS}=-10V, R_G=3.3Ω , R_D=10Ω
*t_r	-	16	-		
*$t_{d(OFF)}$	-	50	-		
*t_f	-	5.2	-		
*Qg	-	8.2	-	nC	V_{DS}=-16V, I_D=-2A, V_{GS}=-4.5V
*Qgs	-	1	-		
*Qgd	-	2	-		
Source-Drain Diode					
*V_{SD}	-	-0.82	-1.2	V	V_{GS}=0V, I_S=-1.2A
*trr	-	6.2	-	ns	I_F=-2A, V_{GS}=0V, dI_F/dt=100A/μs
*Qrr	-	2.3	-	nC	

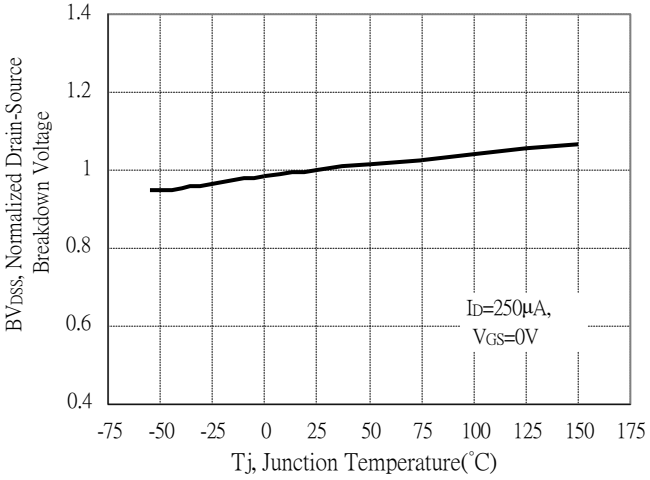
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

N-channel Typical Characteristics

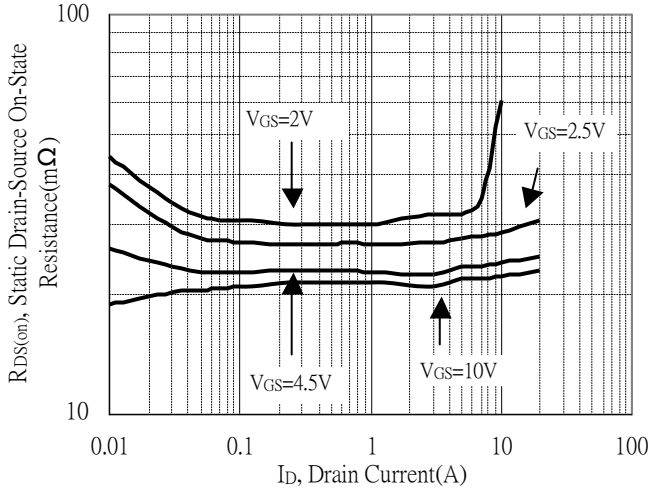
Typical Output Characteristics



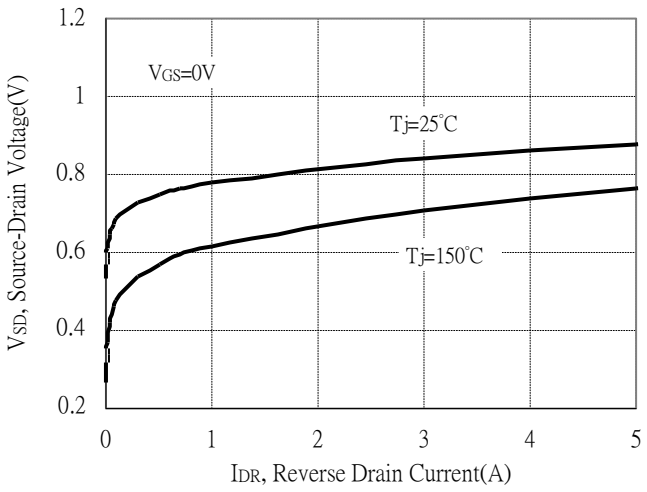
Brekdown Voltage vs Ambient Temperature



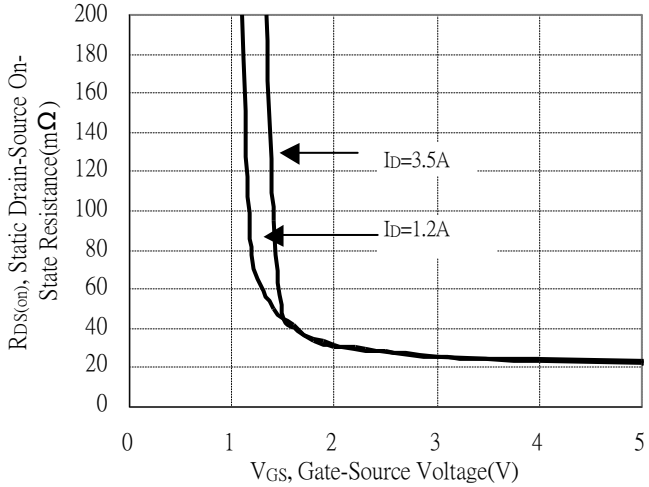
Static Drain-Source On-State resistance vs Drain Current



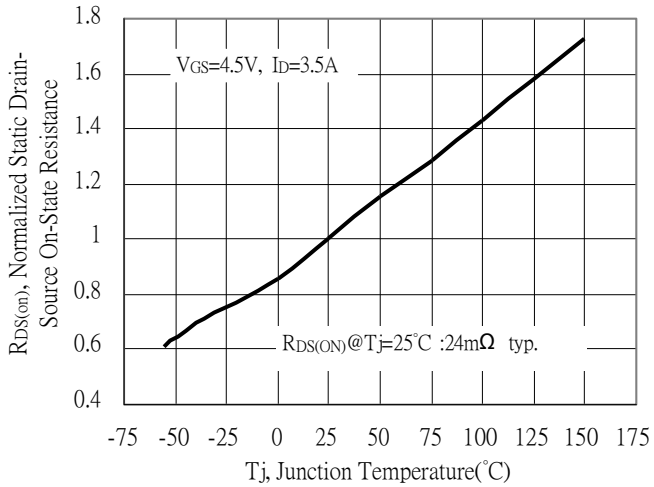
Reverse Drain Current vs Source-Drain Voltage



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

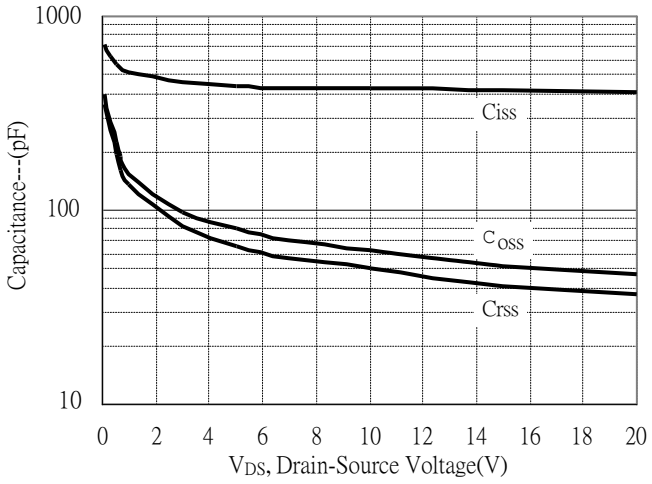


Drain-Source On-State Resistance vs Junction Tempearture

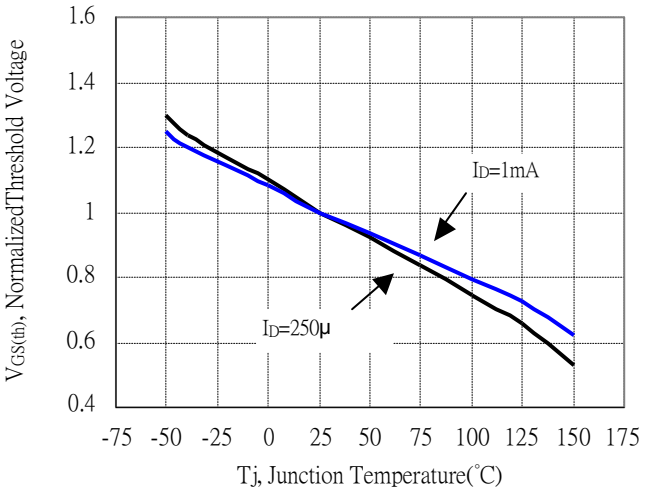


N-channel Typical Characteristics(Cont.)

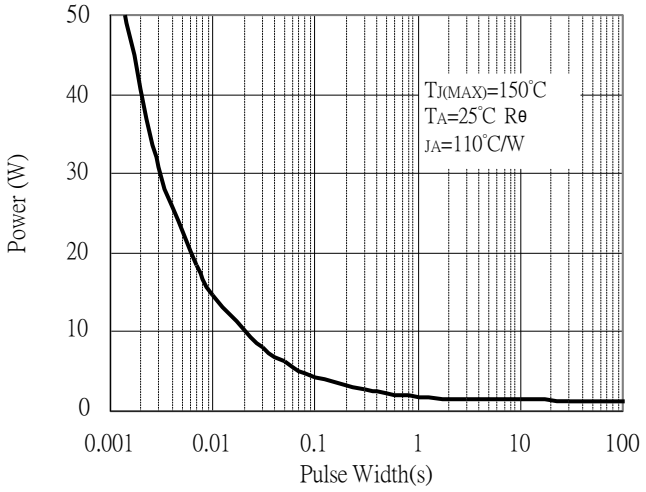
Capacitance vs Drain-to-Source Voltage



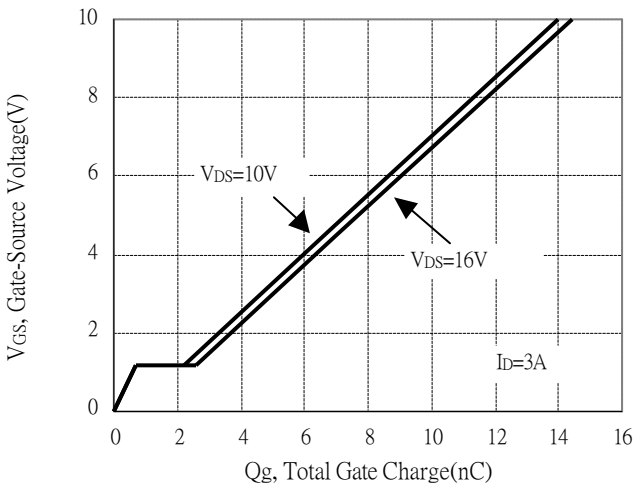
Threshold Voltage vs Junction Tempearture



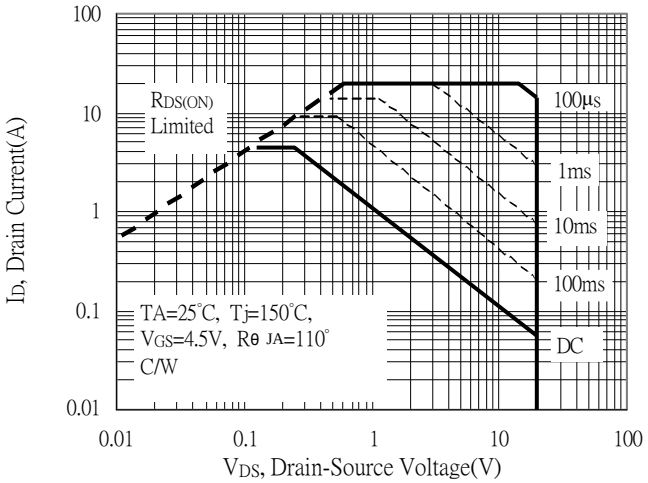
Single Pulse Power Rating, Junction to Ambient



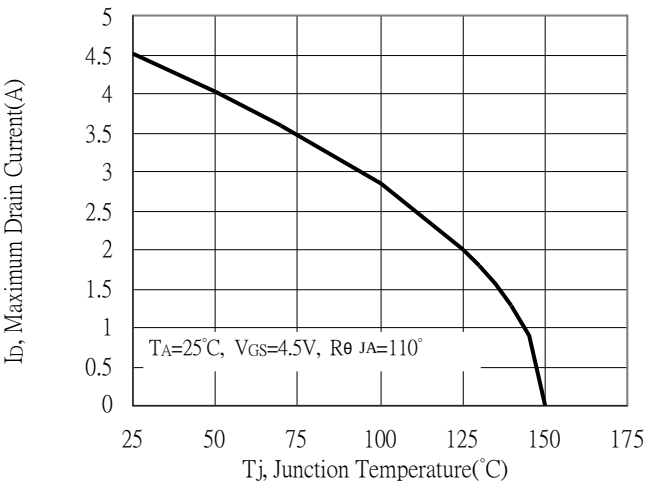
Gate Charge Characteristics



Maximum Safe Operating Area

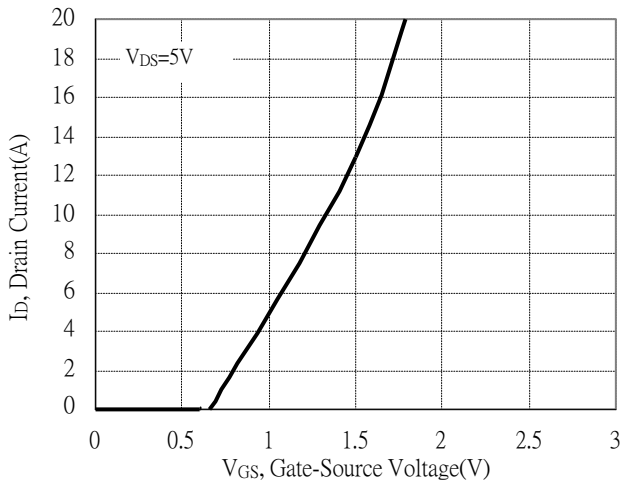


Maximum Drain Current vs JunctionTemperature

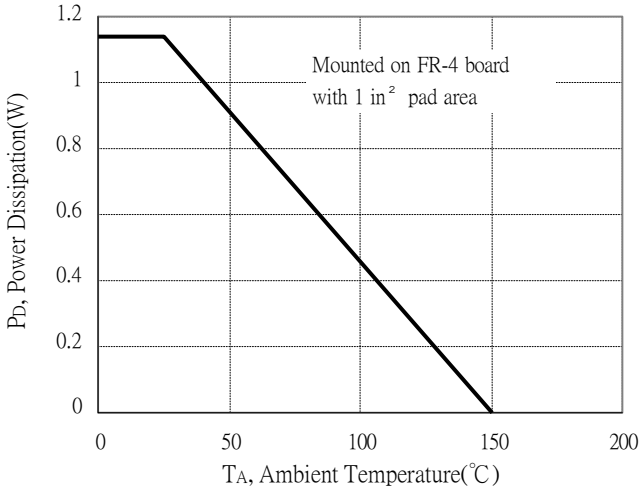


N-channel Typical Characteristics(Cont.)

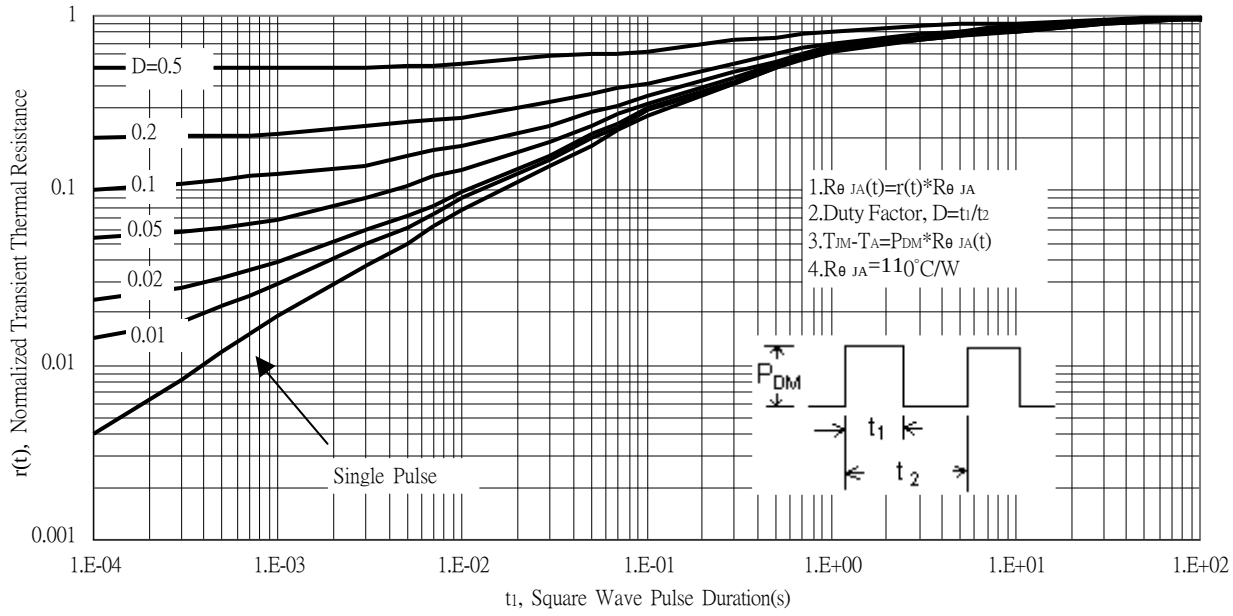
Typical Transfer Characteristics



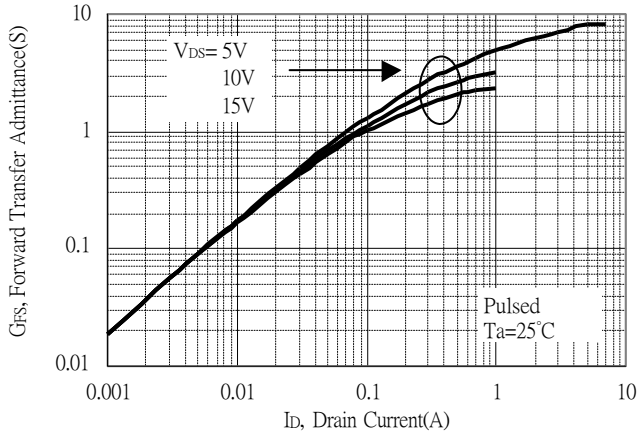
Power Derating Curve



Transient Thermal Response Curves

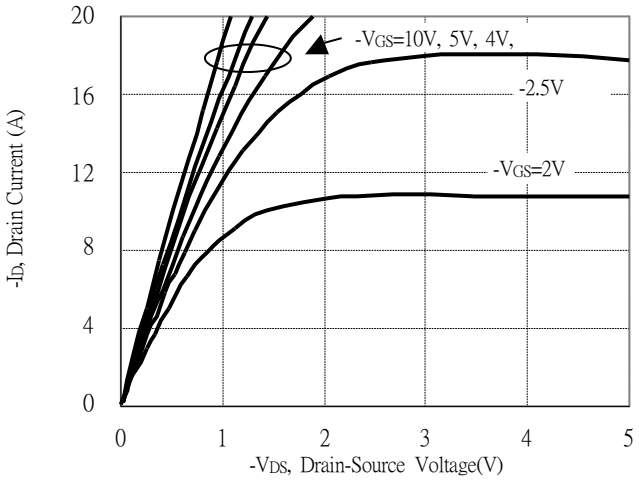


Forward Transfer Admittance vs Drain Current

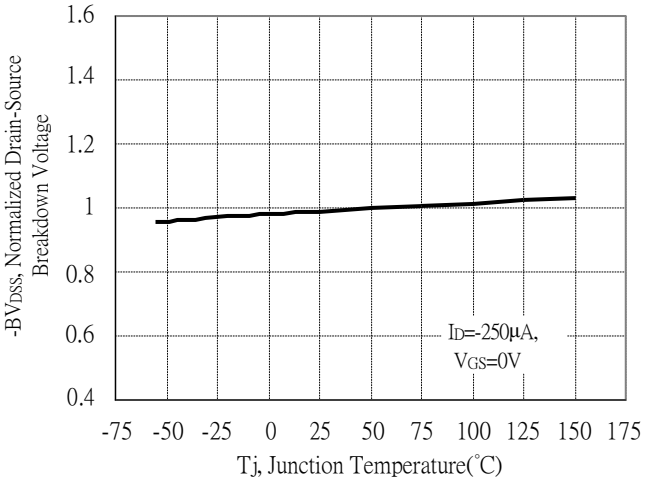


P-channel Typical Characteristics

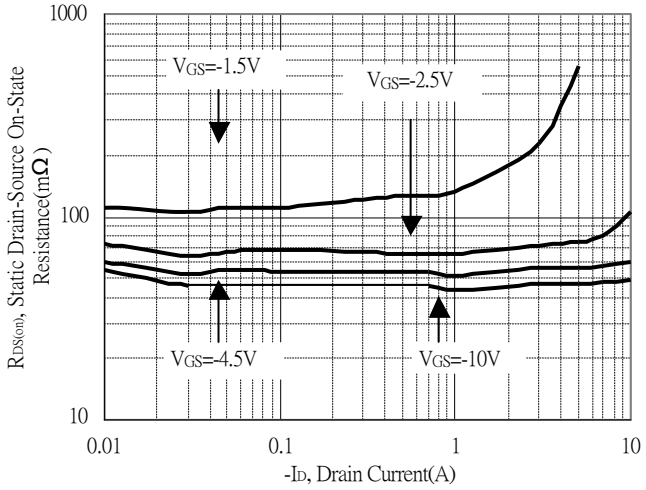
Typical Output Characteristics



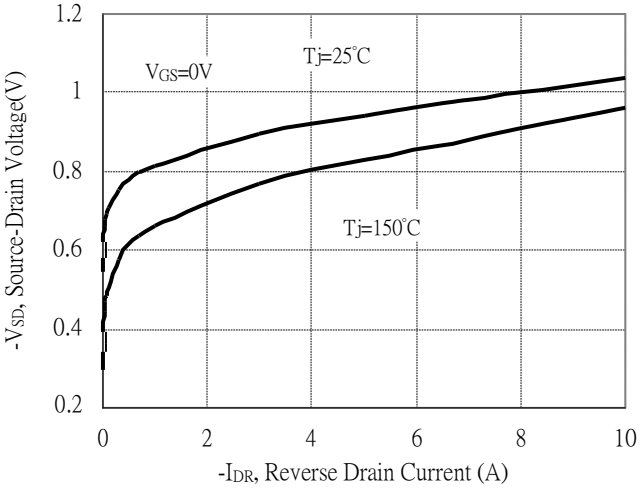
Brekdown Voltage vs Ambient Temperature



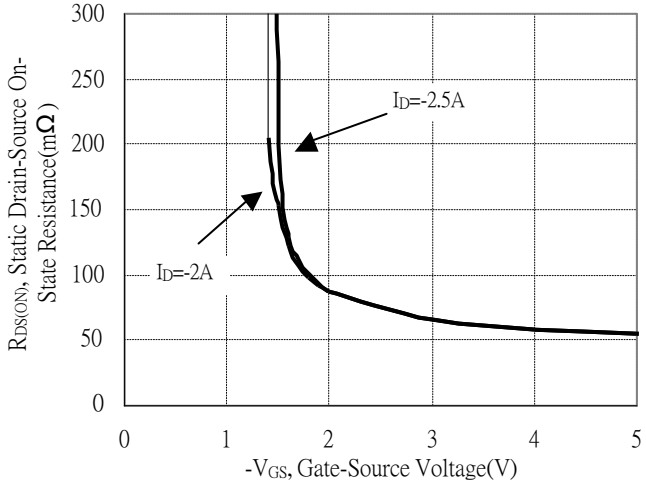
Static Drain-Source On-State resistance vs Drain Current



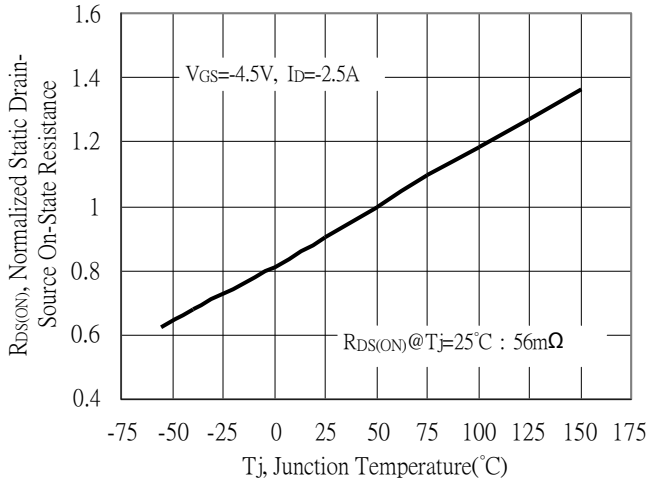
Reverse Drain Current vs Source-Drain Voltage



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

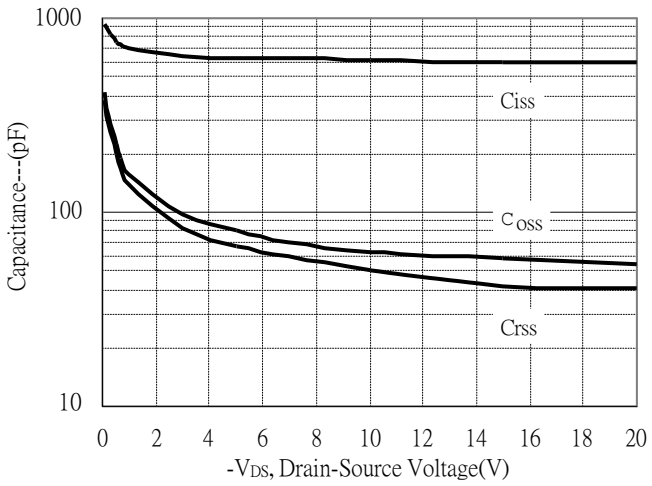


Drain-Source On-State Resistance vs Junction Tempearture

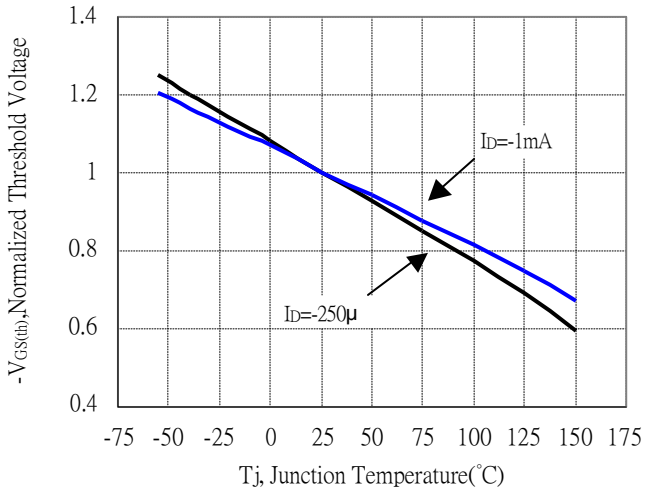


P-channel Typical Characteristics(Cont.)

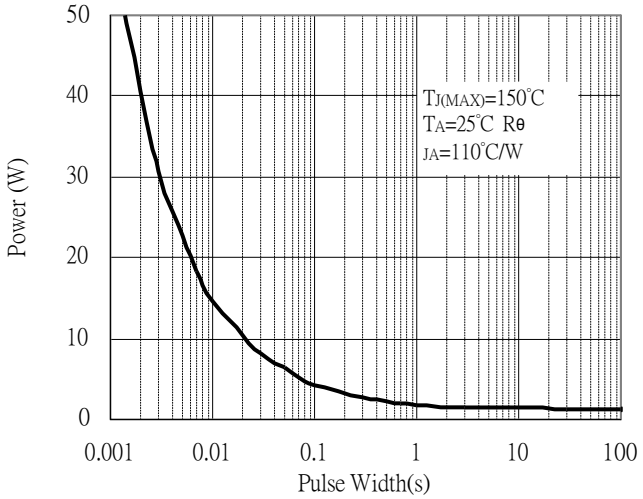
Capacitance vs Drain-to-Source Voltage



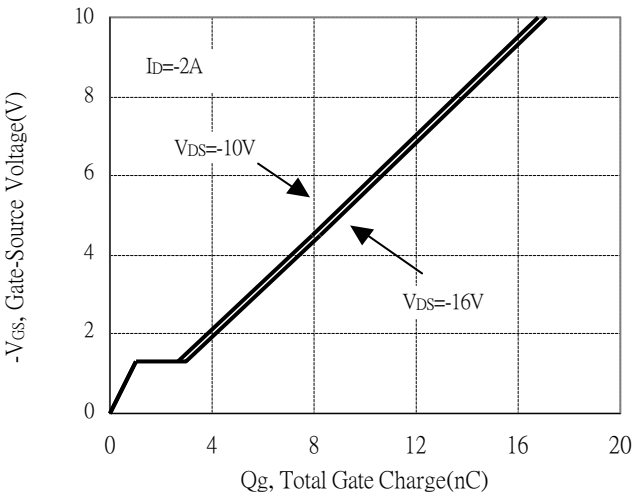
Threshold Voltage vs Junction Tempearture



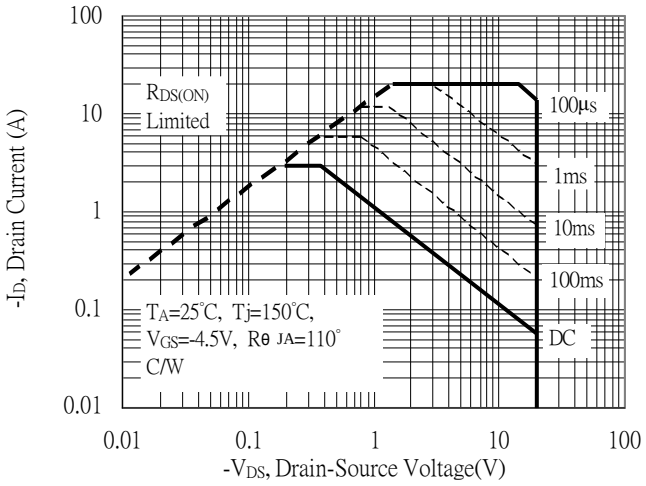
Single Pulse Power Rating, Junction to Ambient



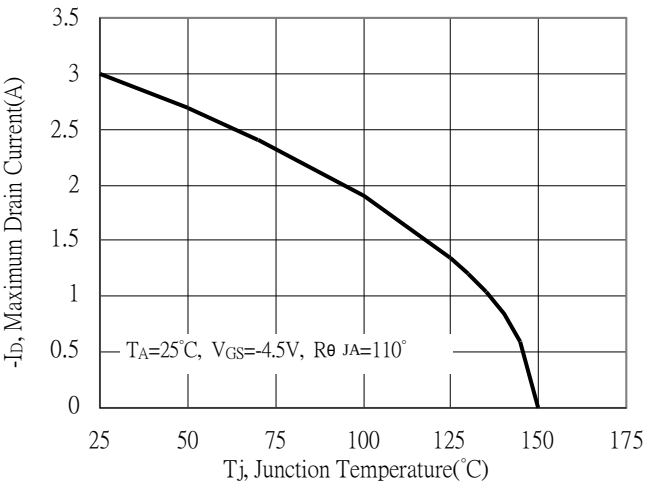
Gate Charge Characteristics



Maximum Safe Operating Area

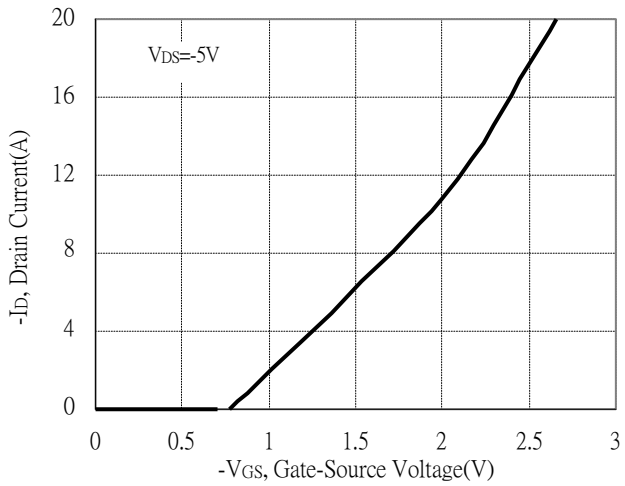


Maximum Drain Current vs JunctionTemperature

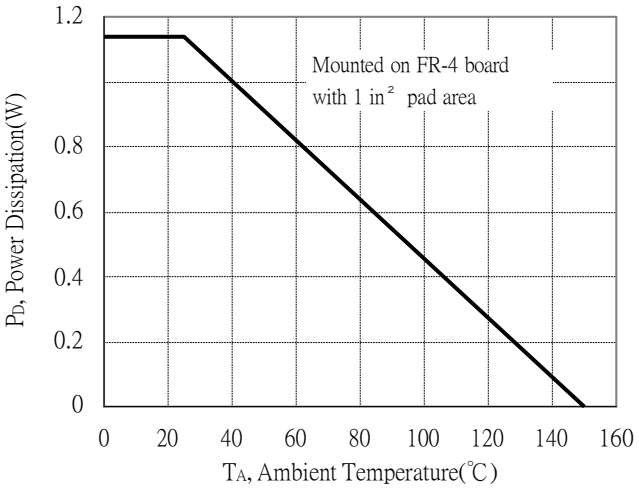


P-channel Typical Characteristics(Cont.)

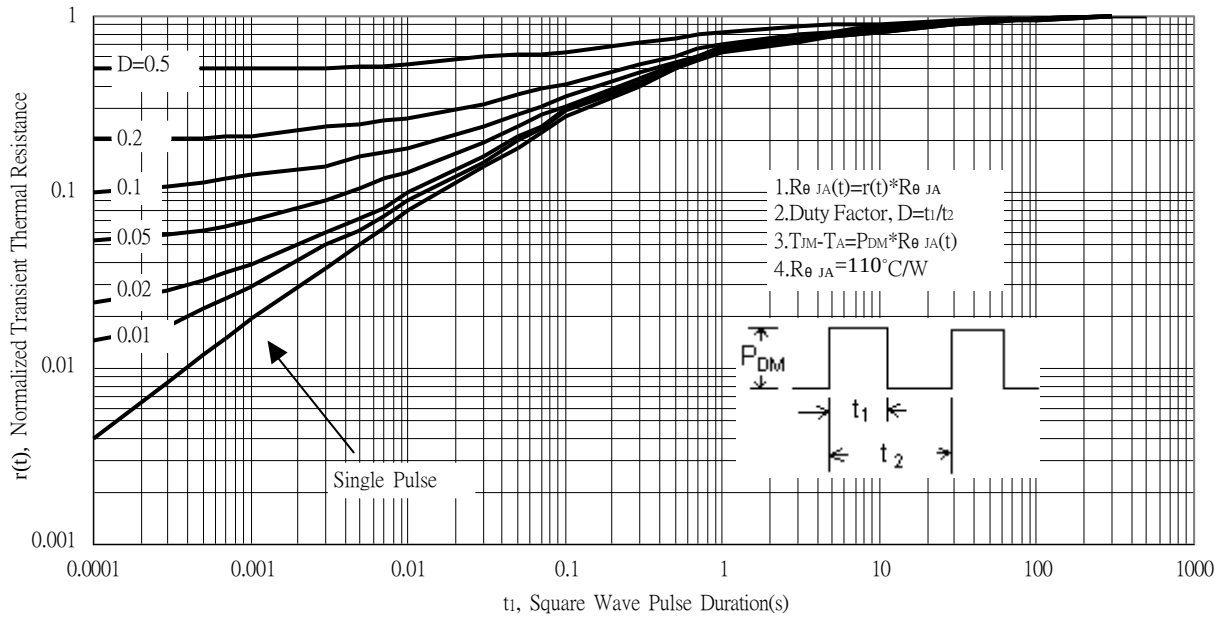
Typical Transfer Characteristics



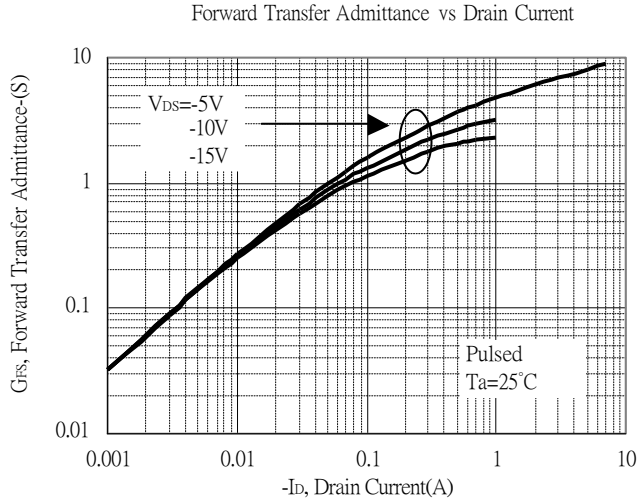
Power Derating Curve



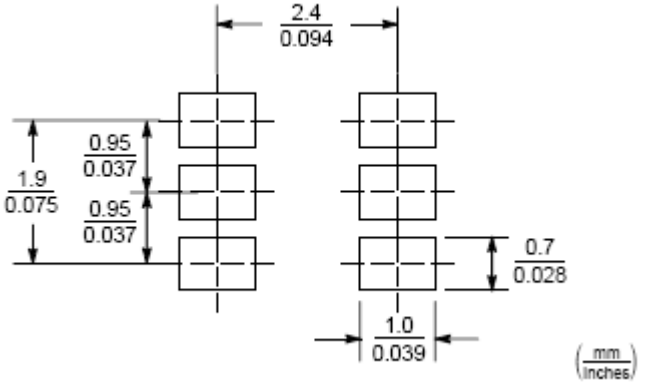
Transient Thermal Response Curves



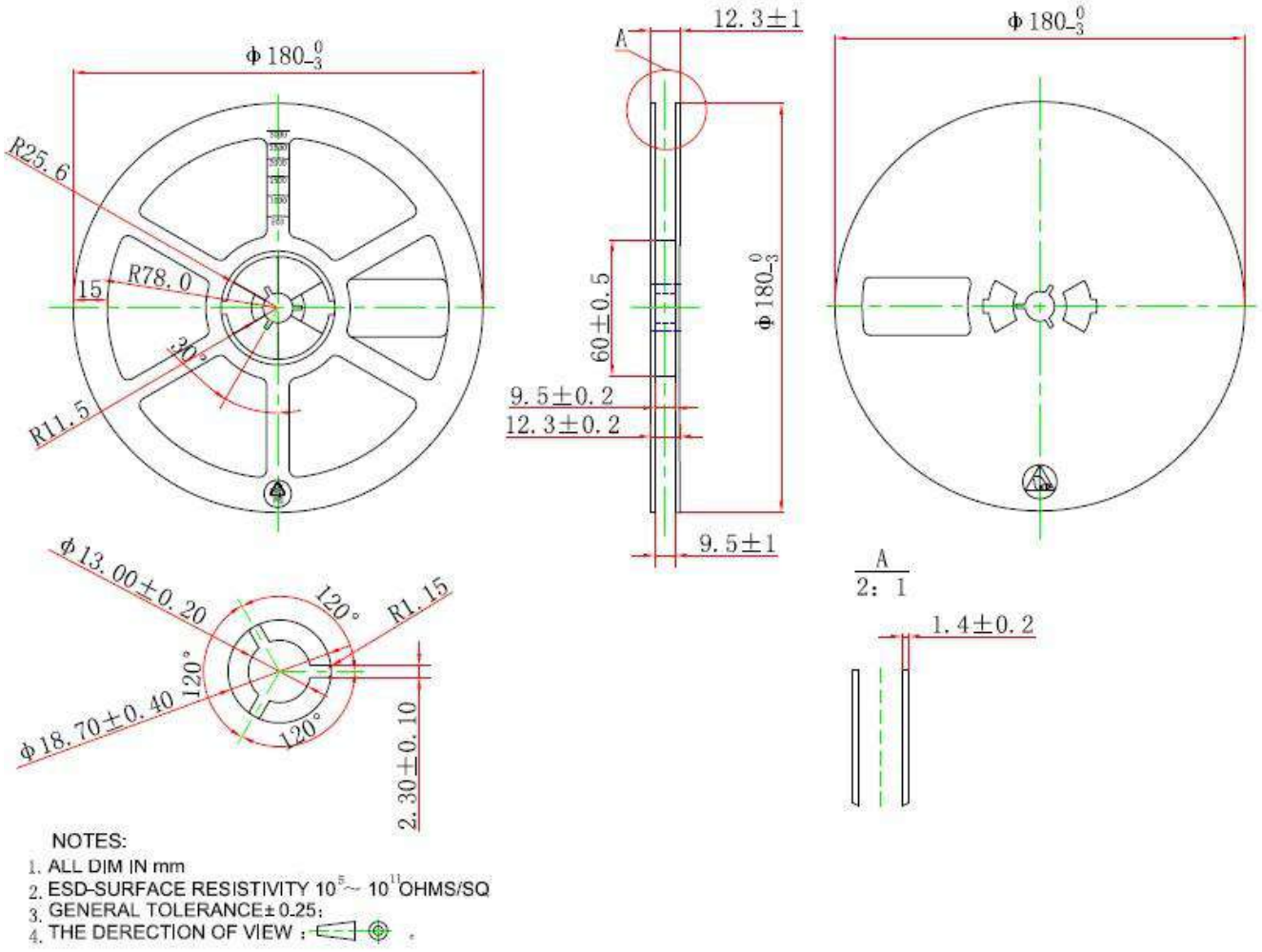
Forward Transfer Admittance vs Drain Current



Recommended Soldering Footprint

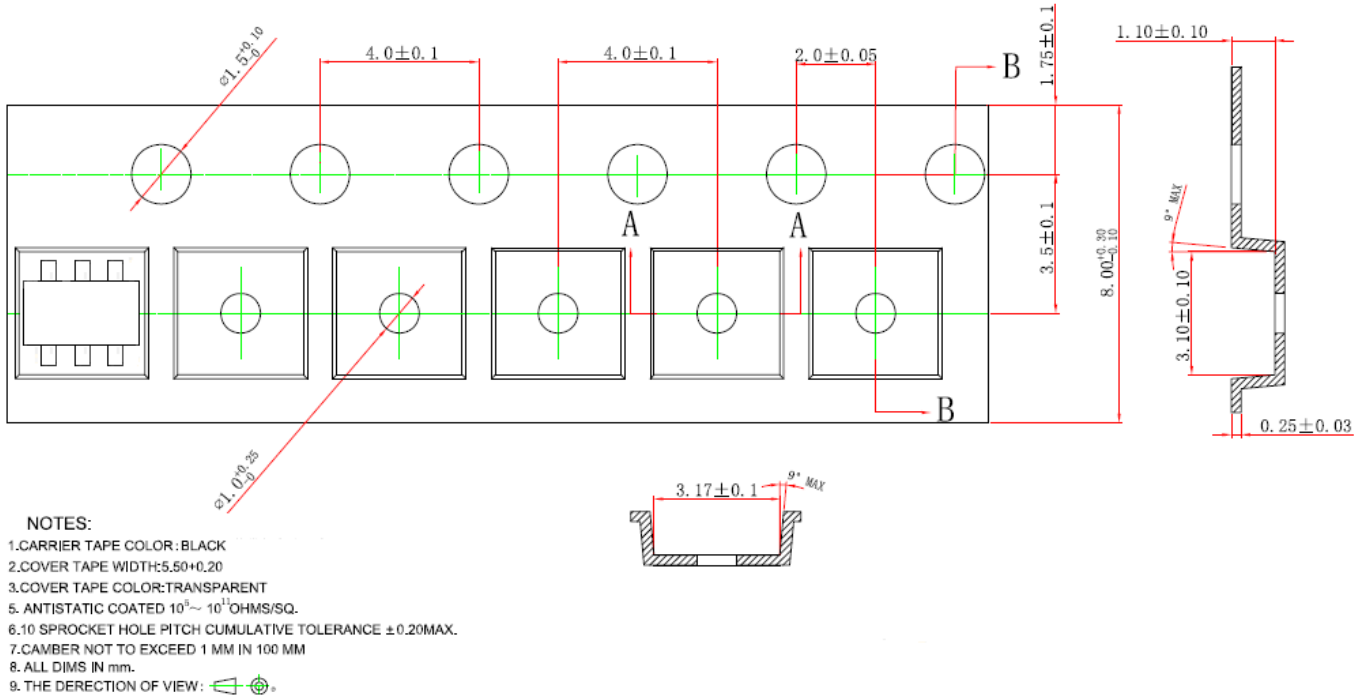


Reel Dimension



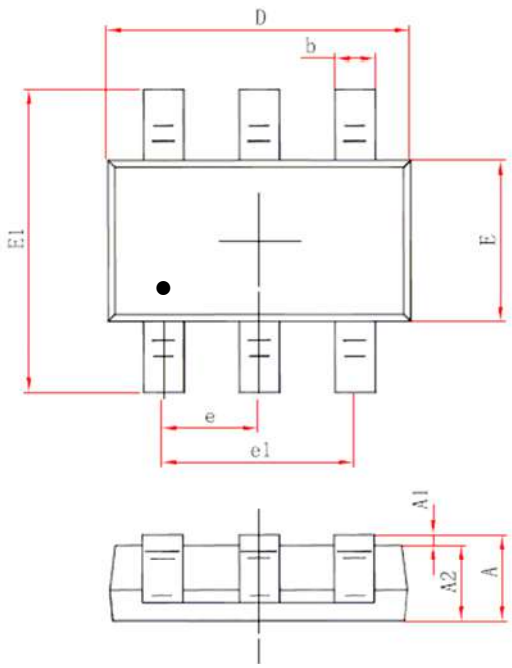
NOTES:
1. ALL DIM IN mm
2. ESD-SURFACE RESISTIVITY 10^{5}~ 10^{11}OHMS/SQ
3. GENERAL TOLERANCE± 0.25;
4. THE DERECTION OF VIEW :

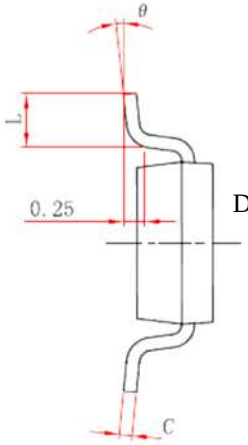
Carrier Tape Dimension



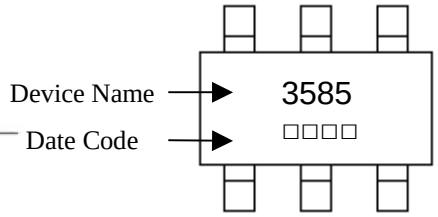
NOTES:
1.CARRIER TAPE COLOR : BLACK
2.COVER TAPE WIDTH:5.50+0.20
3.COVER TAPE COLOR:TRANSPARENT
5. ANTISTATIC COATED 10^{5}~ 10^{11}OHMS/SQ.
6.10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ±0.20MAX.
7.CAMBER NOT TO EXCEED 1 MM IN 100 MM
8. ALL DIMS IN mm.
9. THE DERECTION OF VIEW:

TSOP-6 Dimension





Marking:



6-Lead TSOP-6 Plastic
Surface Mounted Package
Package Code: G6

Style:
Pin 1. Gate1 (G1)
Pin 2. Source2 (S2)
Pin 3. Gate2 (G2)
Pin 4. Drain2 (D2)
Pin 5. Source1 (S1)
Pin 6. Drain1 (D1)

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	0.950 (BSC)		0.037 (BSC)	
b	0.350	0.500	0.014	0.020	e1	1.900 (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°