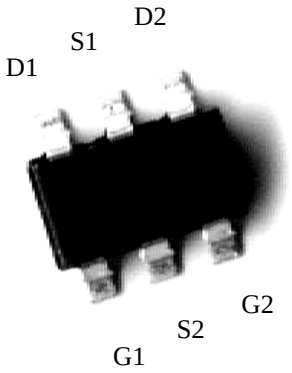
N- AND P-Channel Enhancement Mode MOSFET

Features:

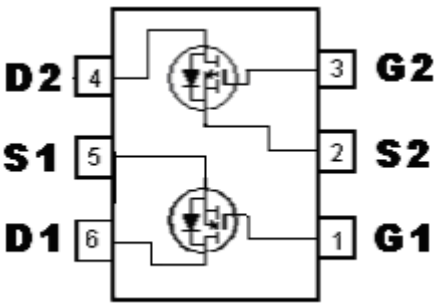
- Simple drive requirement
- Low gate charge
- Low on-resistance
- Fast switching speed
- Pb-free package

Outline

TSOP-6



Equivalent Circuit



G：Gate
S：Source
D：Drain

	N-CH	P-CH
BV_{DSS}	100V	-100V
I_D	1.4A(V_{GS}=10V)	-1.1A(V_{GS}=-10 V)
$R_{DSON(TYP.)}$	280mΩ (V_{GS}=10V)	450mΩ (V_{GS}=-10V)
	295mΩ (V_{GS}=4.5V)	500mΩ (V_{GS}=-4.5V)

Ordering Information

Device	Package	Shipping
KWC8959G6	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}	100	-100	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current (Note 1)	T_A=25°C ,V_{GS}=10V(N-CH), V_{GS}=-10V(P-CH)	I_D	1.4	-1.1	A
	T_A=70°C, V_{GS}=10V(N-CH), V_{GS}=-10V(P-CH)	I_D	1.1	-0.88	A
Pulsed Drain Current (Note 2)		I_{DM}	5.6	-4.4	A
Total Power Dissipation (Note 1)		Pd	1.25		W
Linear Derating Factor			0.01		W / °C
Operating Junction and Storage Temperature		Tj, Tstg	-55~+150		°C
Thermal Resistance, Junction-to-Ambient (Note 1)		Rth,ja	100		°C/W

Note : 1.Surface mounted on 1 in² copper pad of FR-4 board, t≤5 sec; 180°C/W when mounted on minimum copper pad
2.Pulse width limited by maximum junction temperature

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	100	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	1	1.9	2.5	V	V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS}=80V, V_{GS}=0V
I_{DSS}	-	-	10	μA	V_{DS}=80V, V_{GS}=0V, Tj=70°C
*$R_{DS(ON)}$	-	280	420	mΩ	V_{GS}=10V, I_D=1.4A
	-	295	450		V_{GS}=4.5V, I_D=1A
*G_{FS}	-	2.5	-	S	V_{DS}=10V, I_D=1.4A
Dynamic					
Ciss	-	545	-	pF	V_{DS}=30V, V_{GS}=0V, f=1MHz
Coss	-	14	-		
Crss	-	11	-		
*$t_{d(ON)}$	-	9	-	ns	V_{DS}=50V, I_D=1A, V_{GS}=10V, R_G=10Ω
*t_r	-	26	-		
*$t_{d(OFF)}$	-	39	-		
*t_f	-	9	-		
*Qg	-	6.8	-	nC	V_{DS}=50V, I_D=1.4A, V_{GS}=10V
*Qgs	-	1.4	-		
*Qgd	-	2.4	-		
Source-Drain Diode					
*V_{SD}	-	0.77	1.2	V	V_{GS}=0V, I_S=1A
*trr	-	15	-	ns	I_F=1A, V_{GS}=0V, dI_F/dt=100A/μs
*Qrr	-	8	-	nC	

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

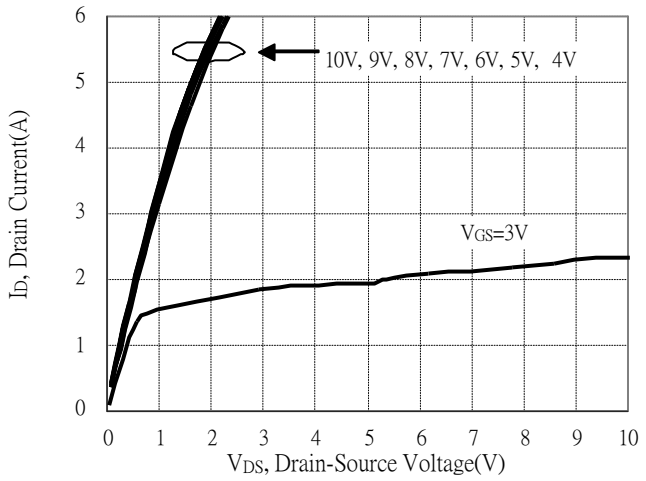
P-Channel Electrical Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-100	-	-	V	V_{GS}=0V, I_D=-250μA
$V_{GS(th)}$	-1.0	-1.9	-2.5	V	V_{DS}=V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS}=-80V, V_{GS}=0V
I_{DSS}	-	-	-10	μA	V_{DS}=-80V, V_{GS}=0V, Tj=70°C
*$R_{DS(ON)}$	-	450	600	mΩ	V_{GS}=-10V, I_D=-0.6A
	-	500	700		V_{GS}=-4.5V, I_D=-0.4A
*G_{FS}	-	1.8	-	S	V_{DS}=-10V, I_D=-0.6A
Dynamic					
Ciss	-	516	-	pF	V_{DS}=-30V, V_{GS}=0V, f=1MHz
Coss	-	16	-		
Crss	-	12	-		
*$t_{d(ON)}$	-	9	-	ns	V_{DS}=-50V, I_D=-1A, V_{GS}=-10V, R_G=10Ω
*t_r	-	26	-		
*$t_{d(OFF)}$	-	36	-		
*t_f	-	9	-		
*Qg	-	6.5	-	nC	V_{DS}=-50V, I_D=-1.1A, V_{GS}=-10V
*Qgs	-	1.2	-		
*Qgd	-	2.4	-		
Source-Drain Diode					
*V_{SD}	-	-0.81	-1.2	V	V_{GS}=0V, I_S=-1A
*trr	-	14	-	ns	I_F=-1A, V_{GS}=0V, dI_F/dt=100A/μs
*Qrr	-	8	-	nC	

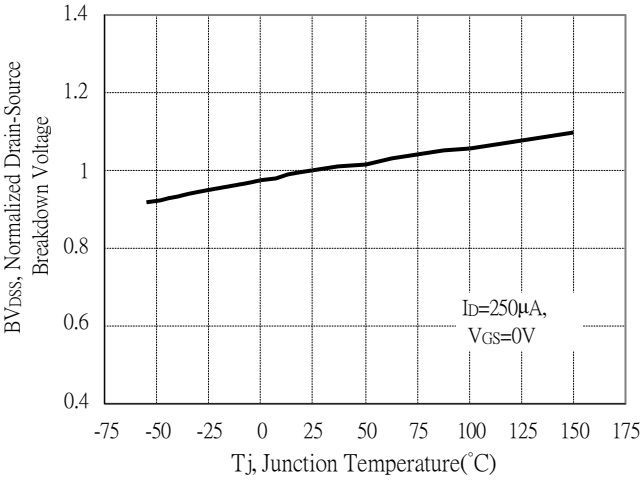
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

N-channel Typical Characteristics

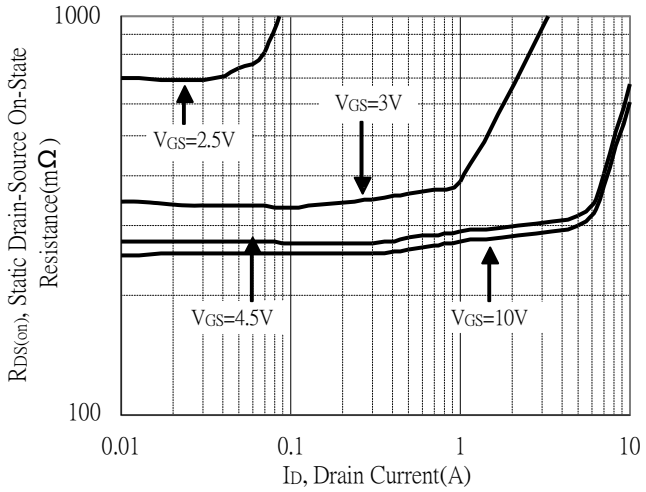
Typical Output Characteristics



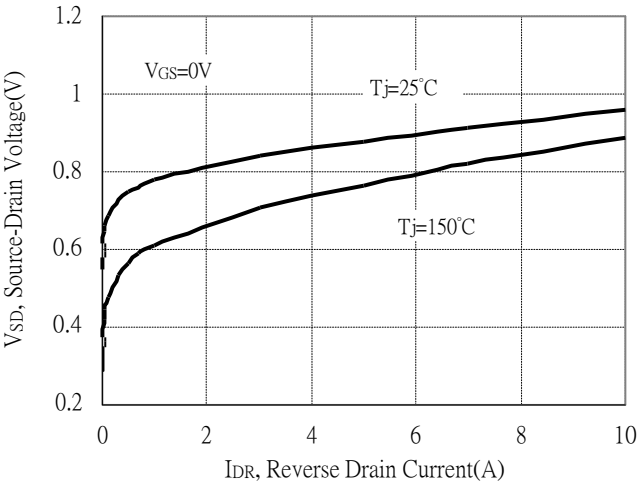
Brekdown Voltage vs Ambient Temperature



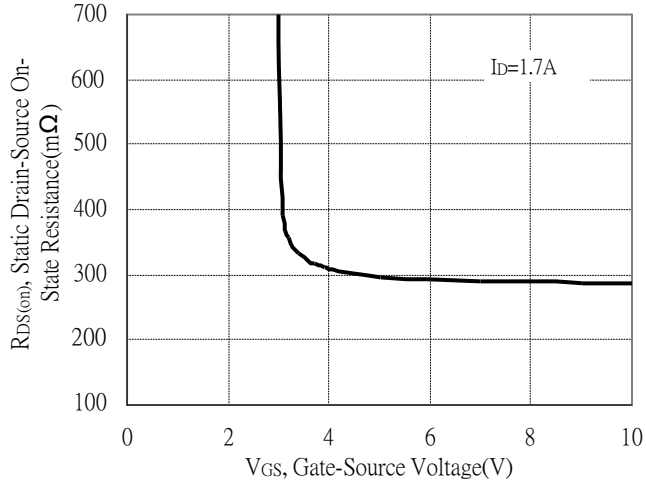
Static Drain-Source On-State resistance vs Drain Current



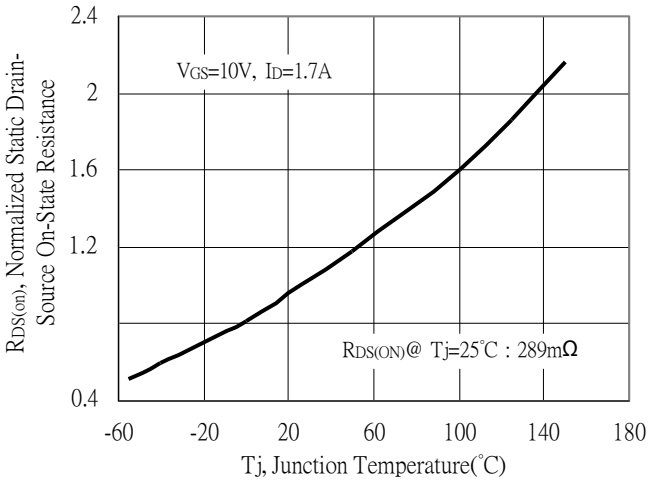
Reverse Drain Current vs Source-Drain Voltage



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

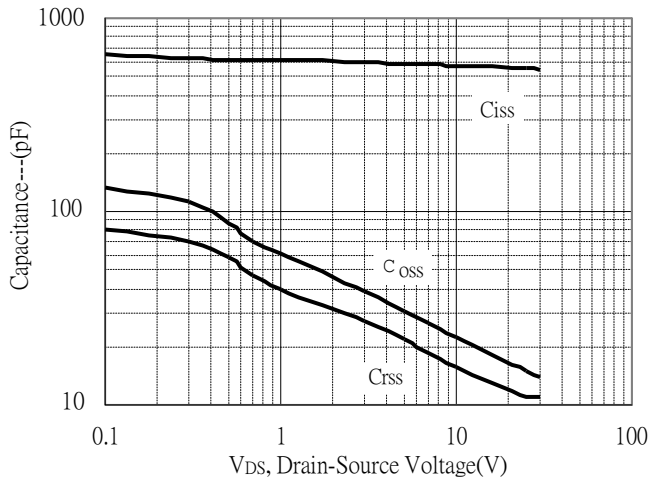


Drain-Source On-State Resistance vs Junction Tempearture

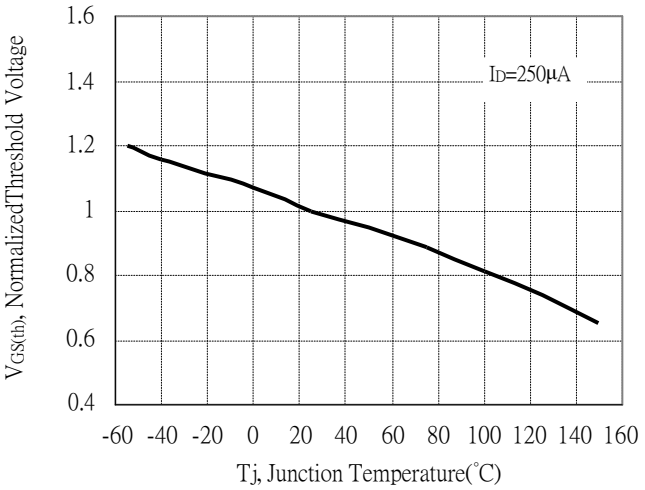


N-channel Typical Characteristics(Cont.)

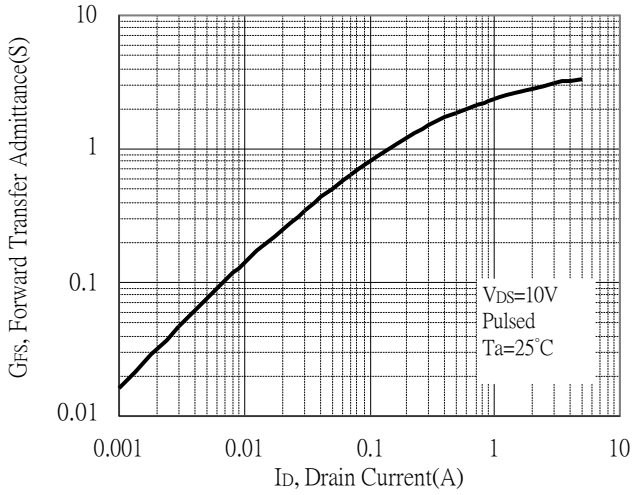
Capacitance vs Drain-to-Source Voltage



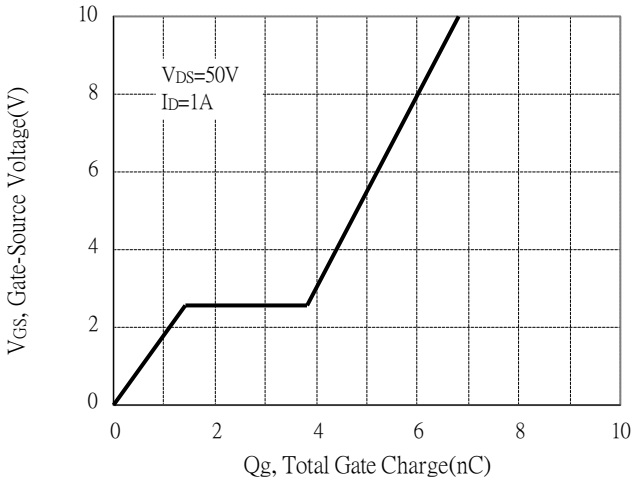
Threshold Voltage vs Junction Tempearture



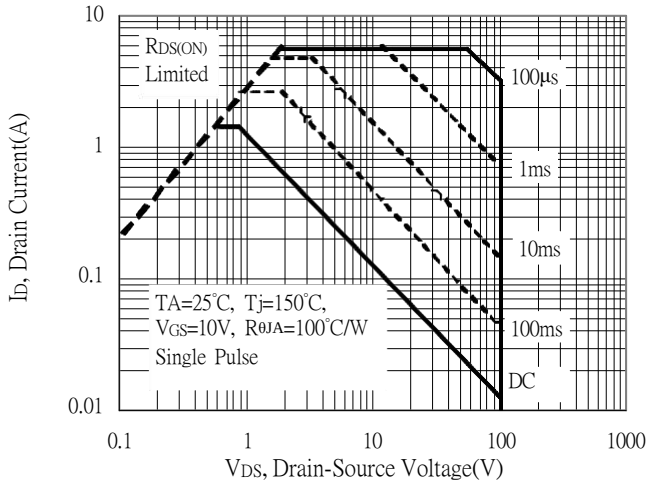
Forward Transfer Admittance vs Drain Current



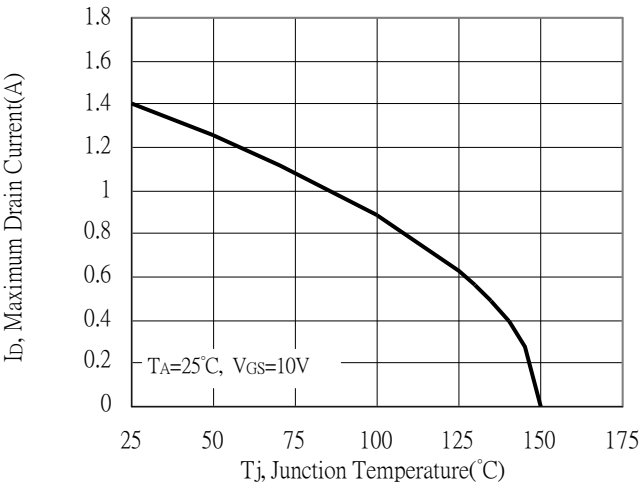
Gate Charge Characteristics



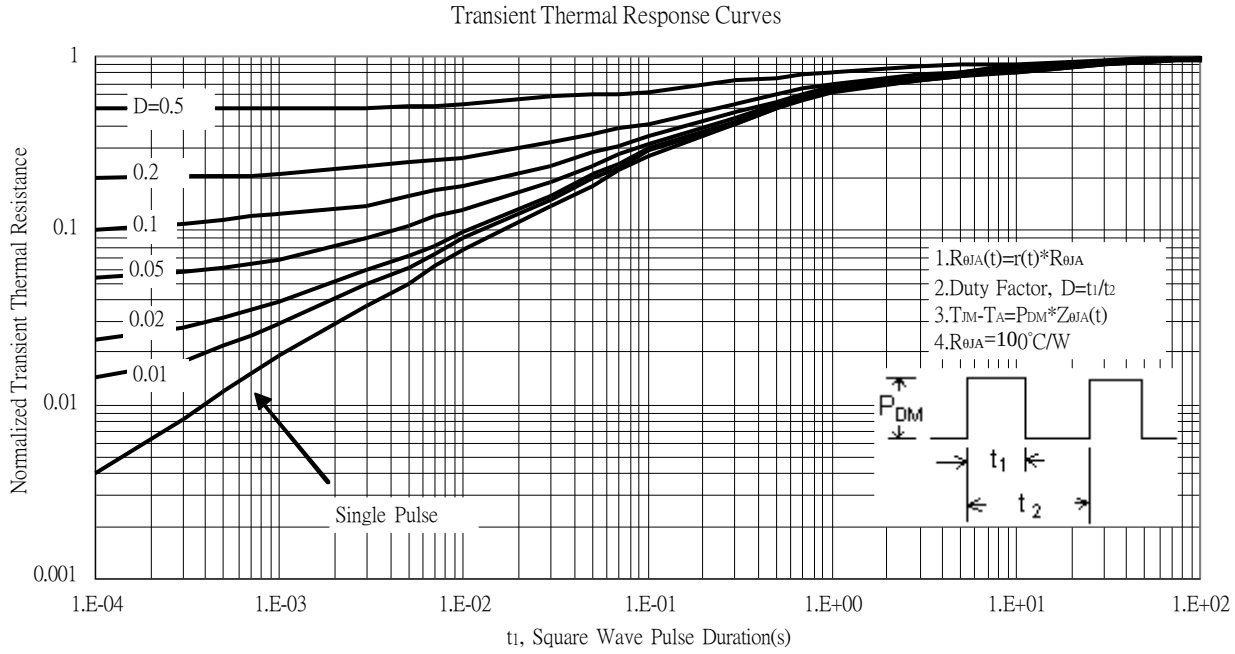
Maximum Safe Operating Area



Maximum Drain Current vs JunctionTemperature

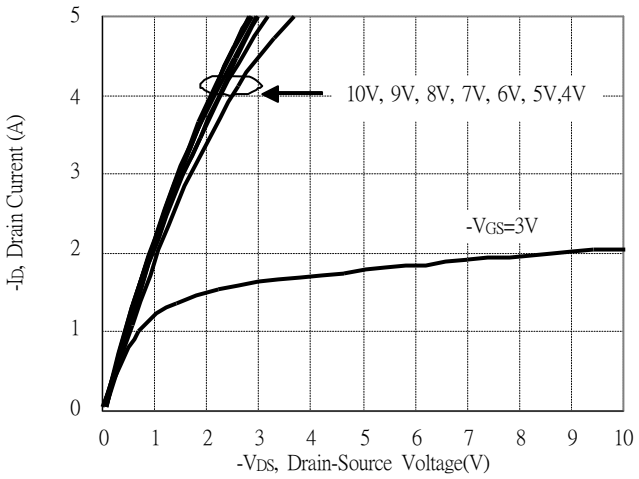


N-channel Typical Characteristics(Cont.)

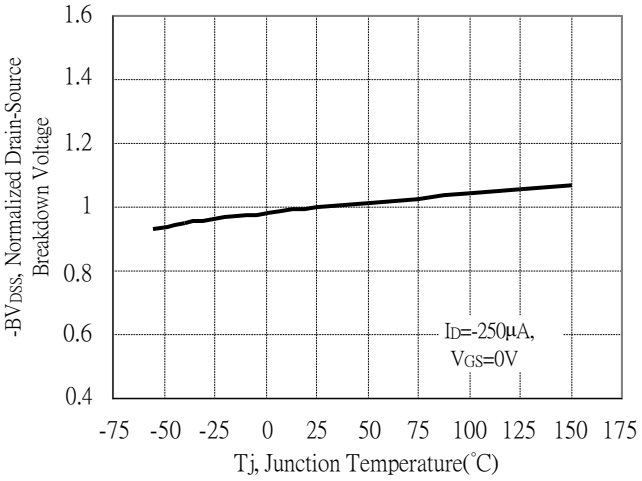


P-channel Typical Characteristics

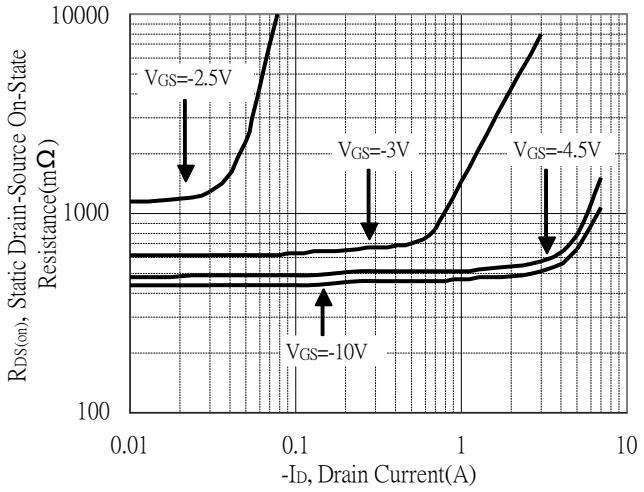
Typical Output Characteristics



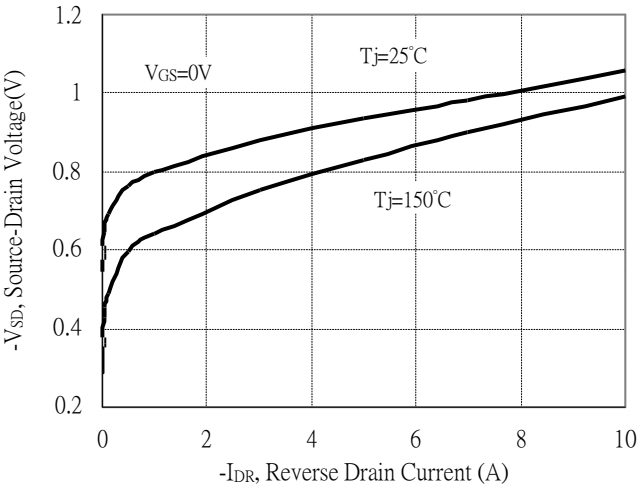
Brekdown Voltage vs Ambient Temperature



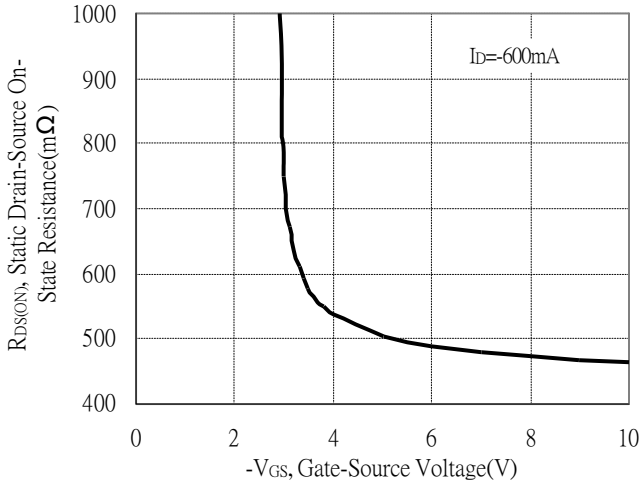
Static Drain-Source On-State resistance vs Drain Current



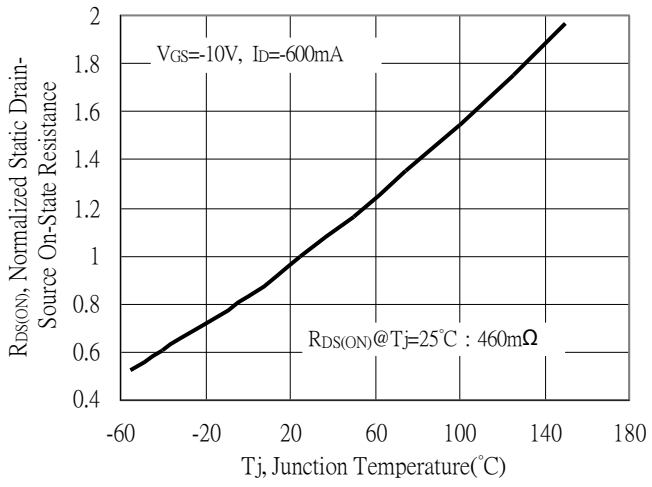
Reverse Drain Current vs Source-Drain Voltage



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

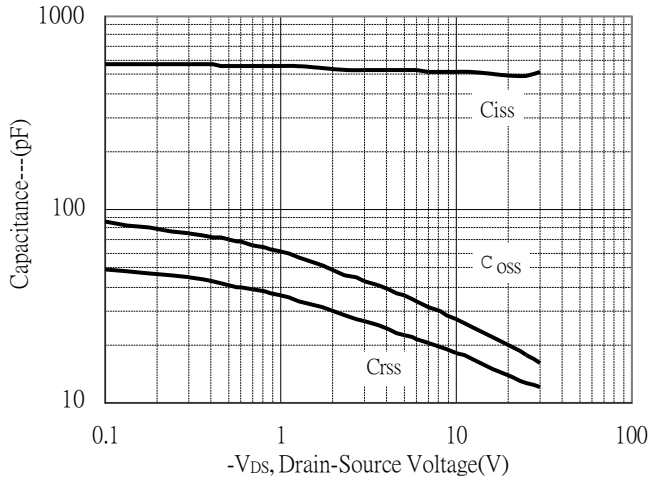


Drain-Source On-State Resistance vs Junction Tempearture

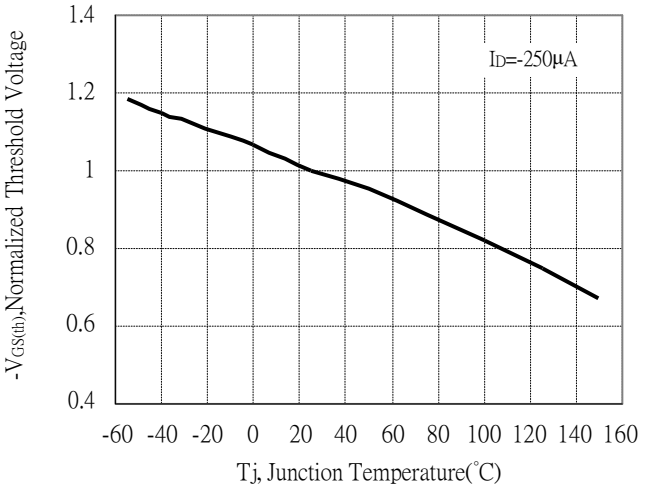


P-channel Typical Characteristics(Cont.)

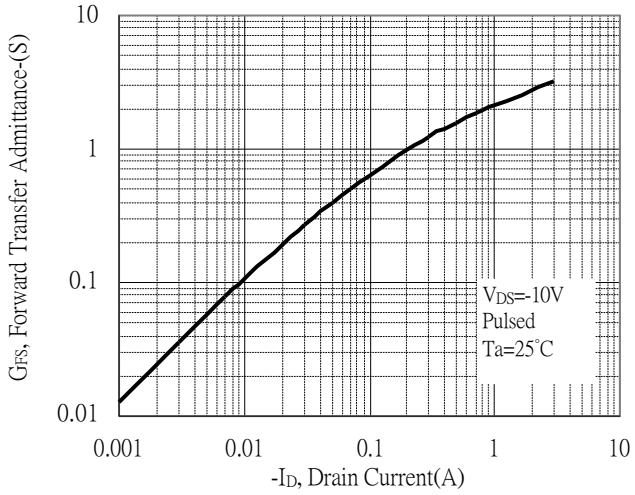
Capacitance vs Drain-to-Source Voltage



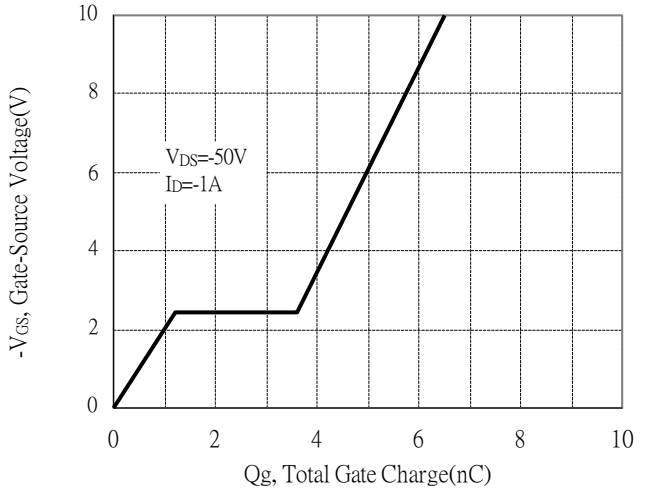
Threshold Voltage vs Junction Tempearture



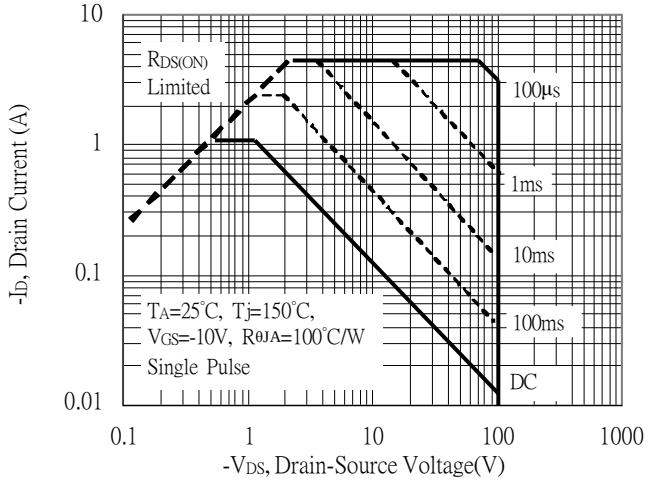
Forward Transfer Admittance vs Drain Current



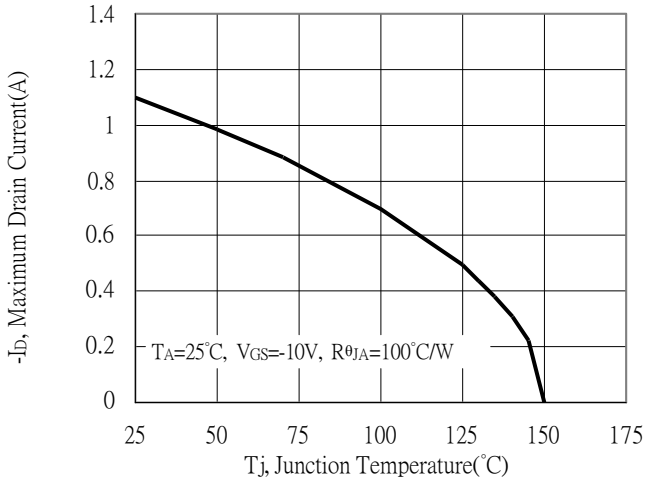
Gate Charge Characteristics



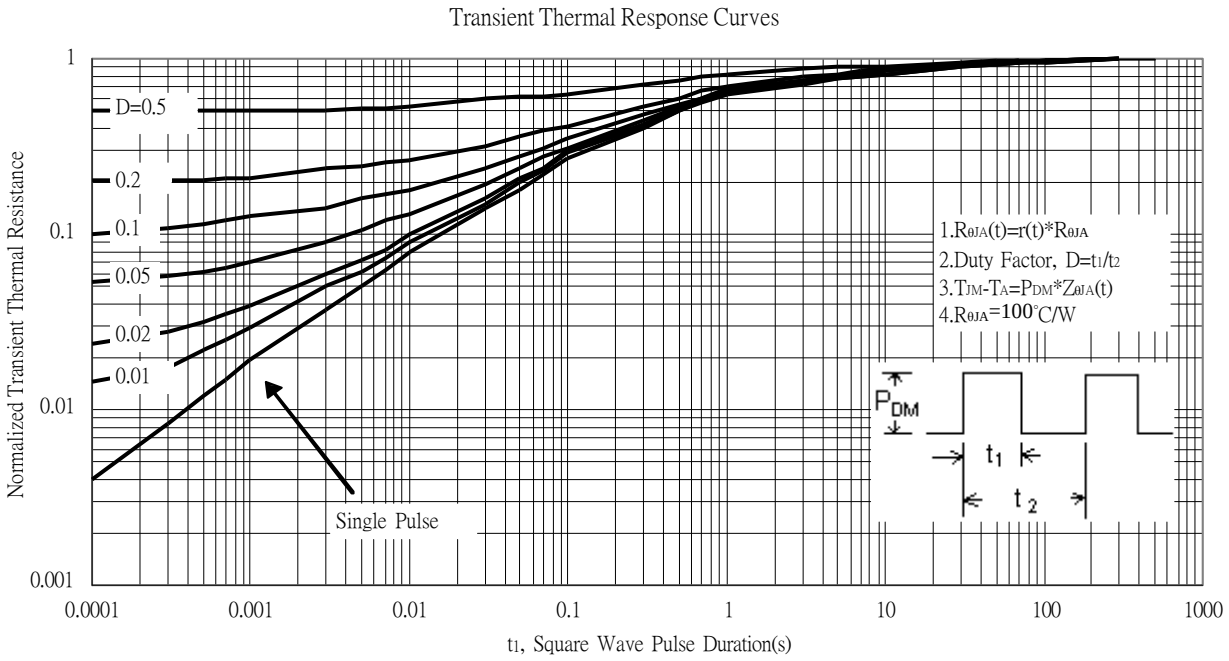
Maximum Safe Operating Area



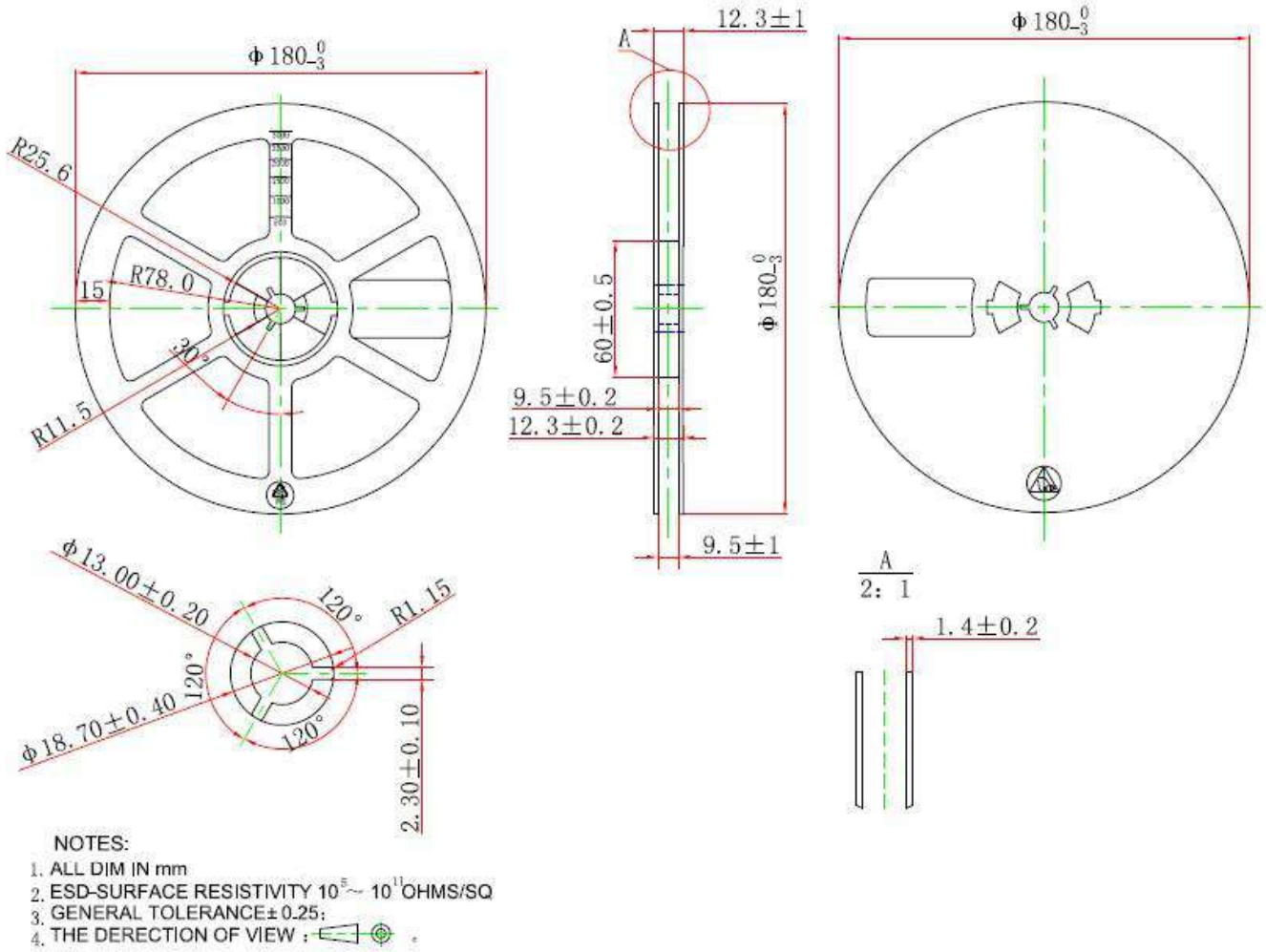
Maximum Drain Current vs JunctionTemperature



P-channel Typical Characteristics(Cont.)

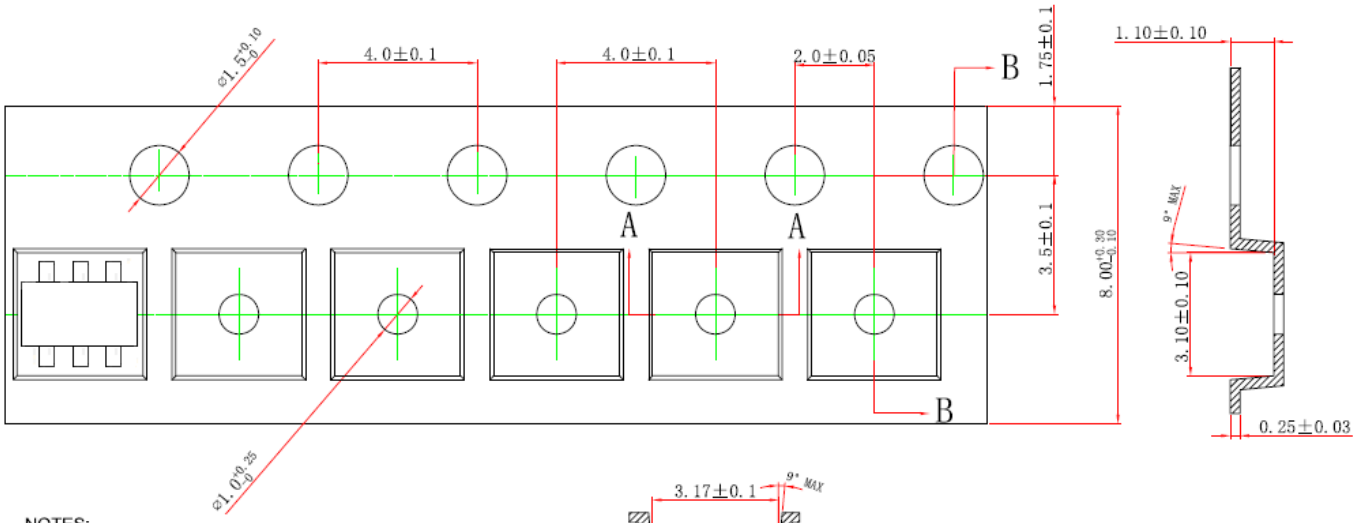


Reel Dimension



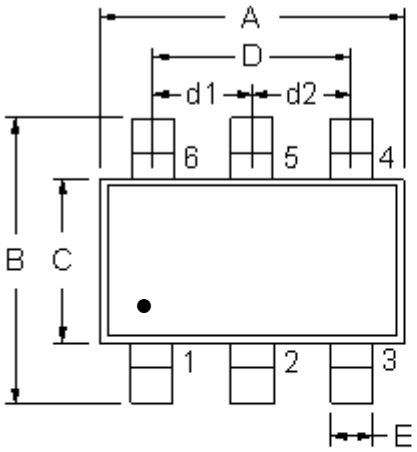
NOTES:
1. ALL DIM IN mm
2. ESD-SURFACE RESISTIVITY 10^{5}~ 10^{11}OHMS/SQ
3. GENERAL TOLERANCE±0.25;
4. THE DERECTION OF VIEW :

Carrier Tape Dimension



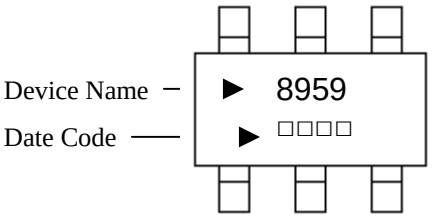
NOTES:
1.CARRIER TAPE COLOR : BLACK
2.COVER TAPE WIDTH:5.50+0.20
3.COVER TAPE COLOR:TRANSPARENT
5. ANTISTATIC COATED 10^5~ 10^{11}OHMS/SQ.
6.10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ±0.20MAX.
7.CAMBER NOT TO EXCEED 1 MM IN 100 MM
8. ALL DIMS IN mm.
9. THE DERECTION OF VIEW :

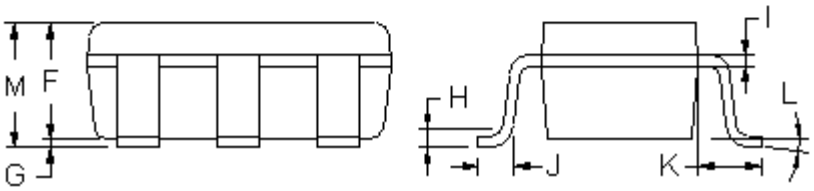
TSOP-6 Dimension



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)

Marking:





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

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1063	0.1220	2.70	3.10	G	0	0.0039	0	0.10
B	0.1024	0.1181	2.60	3.00	H	-	0.0098	-	0.25
C	0.0551	0.0709	1.40	1.80	I	0.0047 REF		0.12 REF	
D	0.0748 REF		1.90 REF		J	0.0177 REF		0.45 REF	
d1	0.0374 REF		0.95 REF		K	0.0236 REF		0.60 REF	
d2	0.0374 REF		0.95 REF		L	0°	10°	0°	10°
E	0.0118	0.0197	0.30	0.50	M	-	0.0433	-	1.10
F	0.0276	0.0394	0.70	1.00					