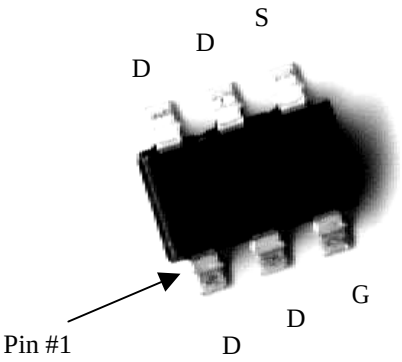
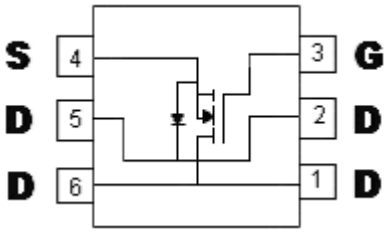
N-Channel Enhancement Mode Power MOSFET

Features:

- Simple drive requirement
- Low on-resistance
- Small package outline
- Pb-free lead plating and halogen-free package

TSOP-6





Ordering Information

Device	Package	Shipping
KWN2604G6	TSOP-6 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current @V_{GS}=4.5V, T_A=25 °C (Note 1)	I_D	7	A
Continuous Drain Current @V_{GS}=4.5V, T_A=100 °C (Note 1)	I_D	4.4	
Pulsed Drain Current (Note 2, 3)	I_{DM}	20	
Total Power Dissipation @ T_A=25 °C	Pd	2	W
Linear Derating Factor		0.016	W / °C
Operating Junction and Storage Temperature Range	Tj ; Tstg	-55~+150	°C
Thermal Resistance, Junction-to-Ambient (Note 1)	Rth,ja	62.5	°C/W

Note : 1.Surface mounted on 1 in² copper pad of FR-4 board. 156℃/W when mounted on minimum copper pad.
2.Pulse width limited by maximum junction temperature.
3.Pulse Width ≤300μs, Duty Cycle≤2%

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	30	-	-	V	V_{GS}=0V, I_D=250μA
$\Delta BV_{DSS}/\Delta Tj$	-	0.02	-	V/℃	Reference to 25℃, I_D=250μA
$V_{GS(th)}$	1	-	3	V	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, Tj=25℃
	-	-	25		V_{DS}=24V, V_{GS}=0V, Tj=70℃
*$R_{DS(ON)}$	-	19	27	mΩ	I_D=7A, V_{GS}=10V
	-	26	40		I_D=5A, V_{GS}=4.5V
*G_{FS}	-	8	-	S	V_{DS}=5V, I_D=7A
Dynamic					
Ciss	-	745	-	pF	V_{DS}=25V, V_{GS}=0, f=1MHz
Coss	-	51	-		
Crss	-	58	-		
$t_{d(ON)}$	-	5	-	ns	V_{DS}=15V, I_D=1A, V_{GS}=10V, R_G=3.3Ω
t_r	-	8	-		
$t_{d(OFF)}$	-	18	-		
t_f	-	4	-		
Qg	-	7	-	nC	V_{DS}=24V, I_D=4.8A, V_{GS}=4.5V
Qgs	-	2.3	-		
Qgd	-	2.7	-		

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

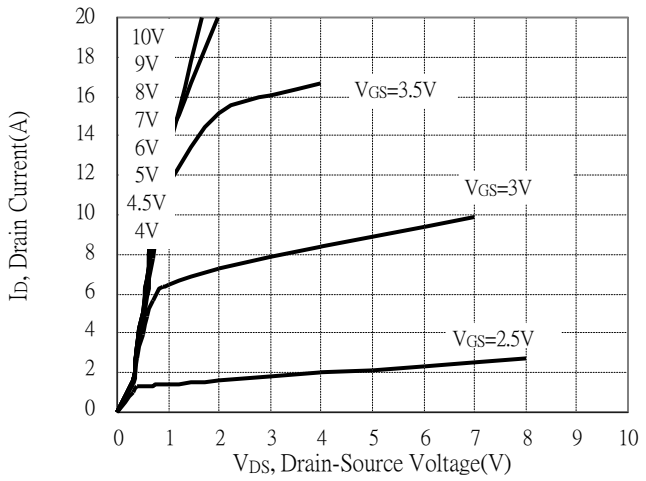
Source Drain Diode

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
*V_{SD}	-	0.84	1.2	V	I_S=4.8A,V_{GS}=0V
*T_{rr}	-	15	-	ns	I_S=4.8A,V_{GS}=0V, dI/dt=100A/μs
Q_{rr}	-	7	-	nC	

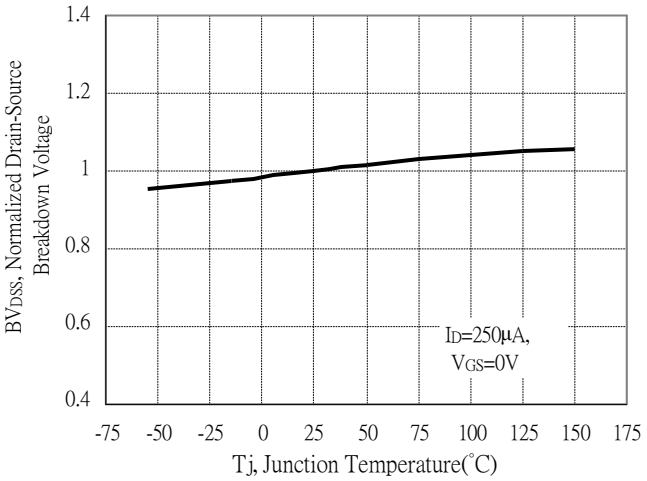
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

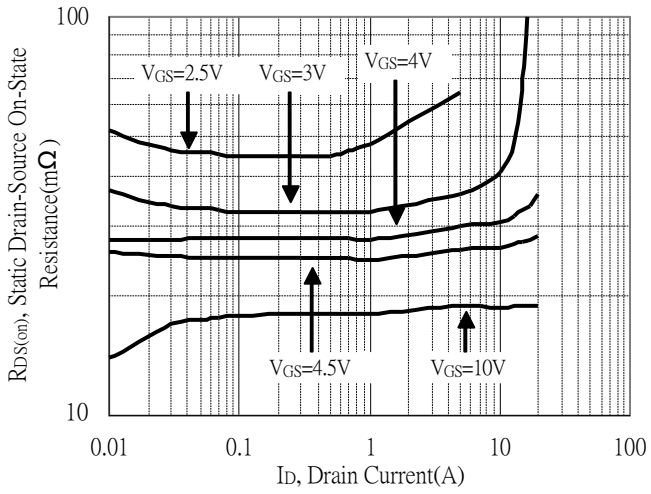
Typical Output Characteristics



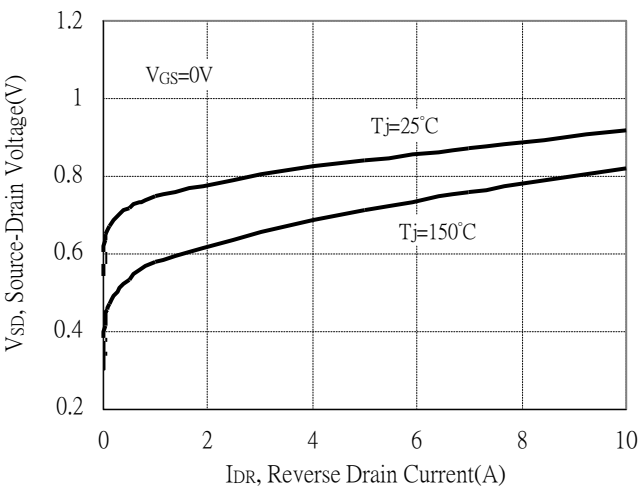
Brekdown Voltage vs Ambient Temperature



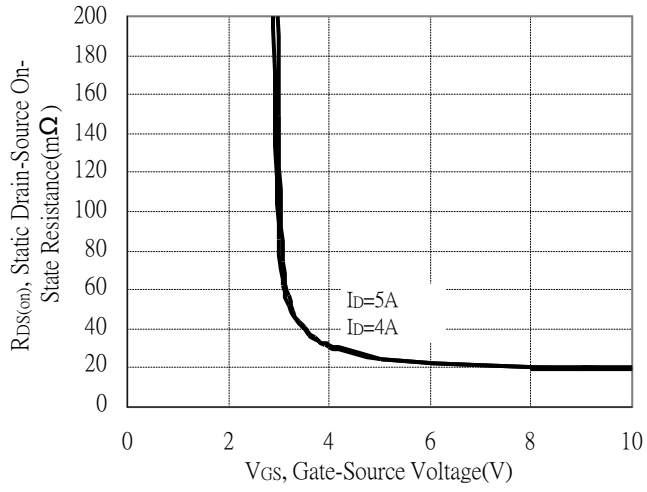
Static Drain-Source On-State resistance vs Drain Current



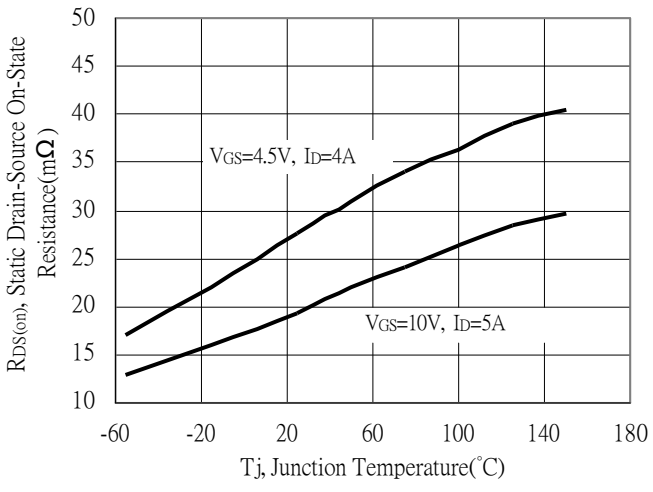
Reverse Drain Current vs Source-Drain Voltage



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

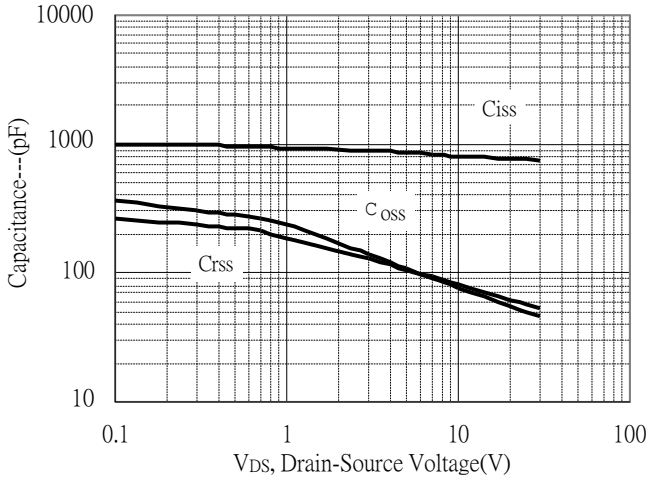


Drain-Source On-State Resistance vs Junction Tempearture

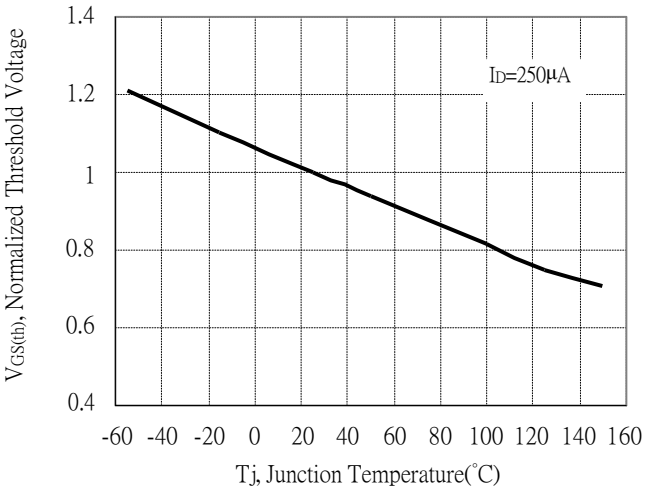


Typical Characteristics (Cont.)

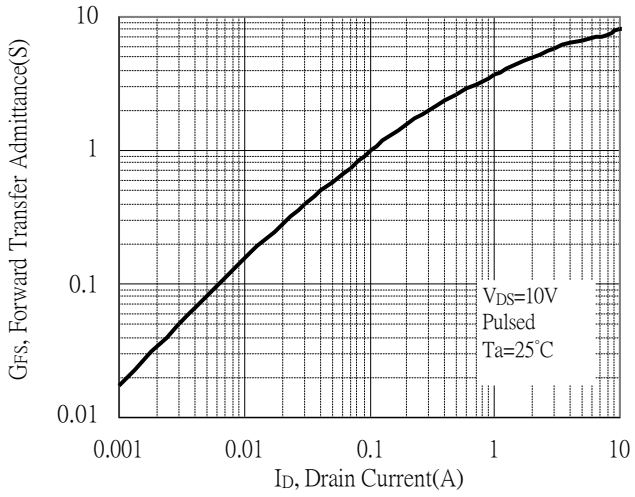
Capacitance vs Drain-to-Source Voltage



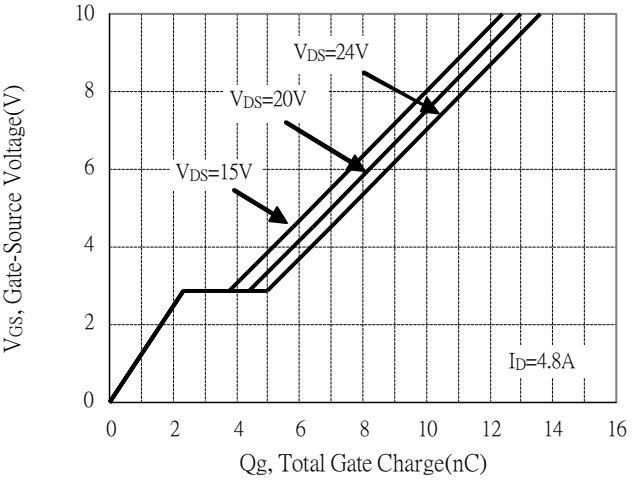
Threshold Voltage vs Junction Tempearture



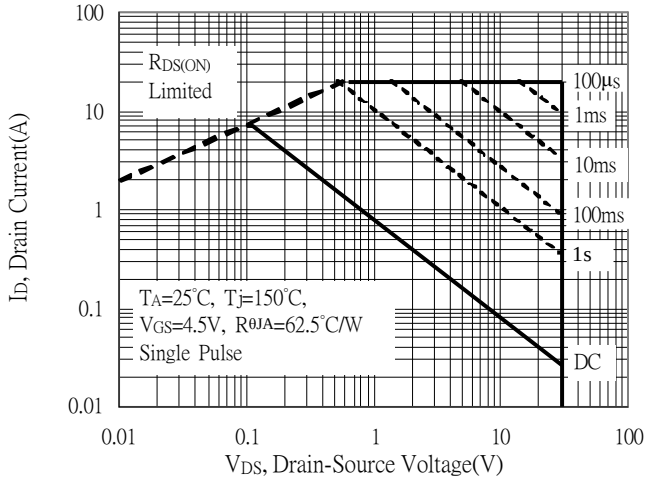
Forward Transfer Admittance vs Drain Current



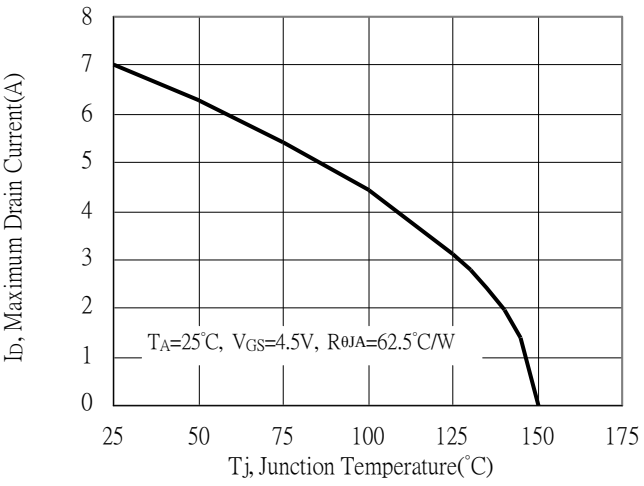
Gate Charge Characteristics



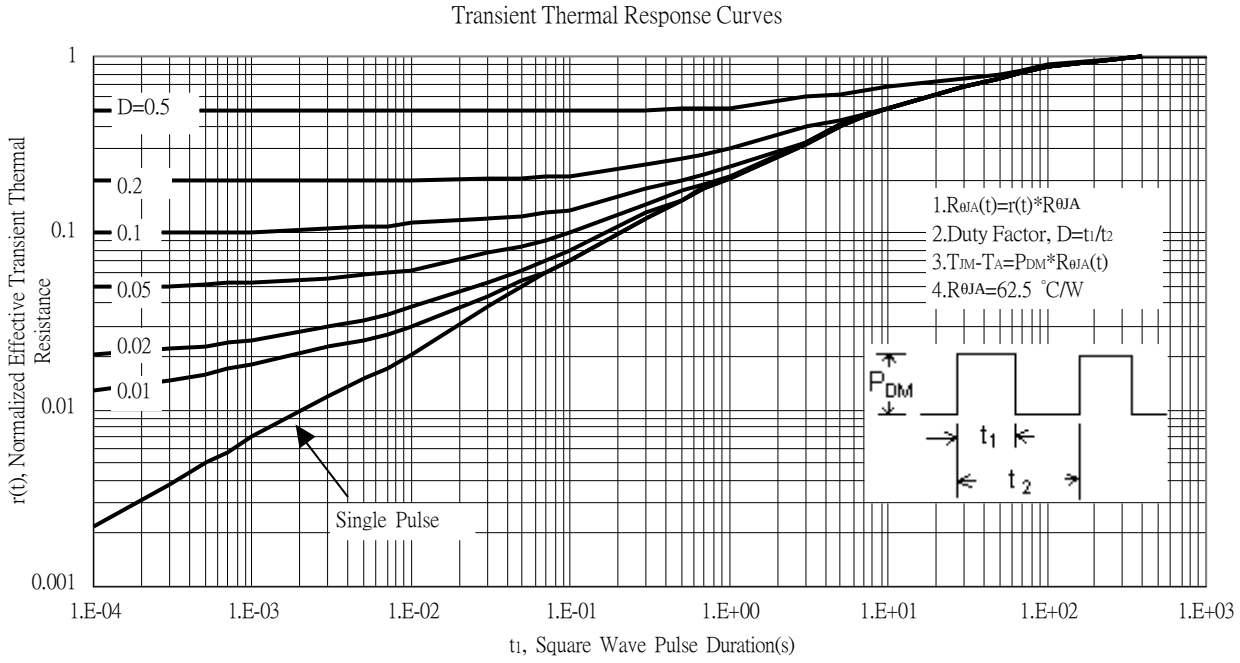
Maximum Safe Operating Area



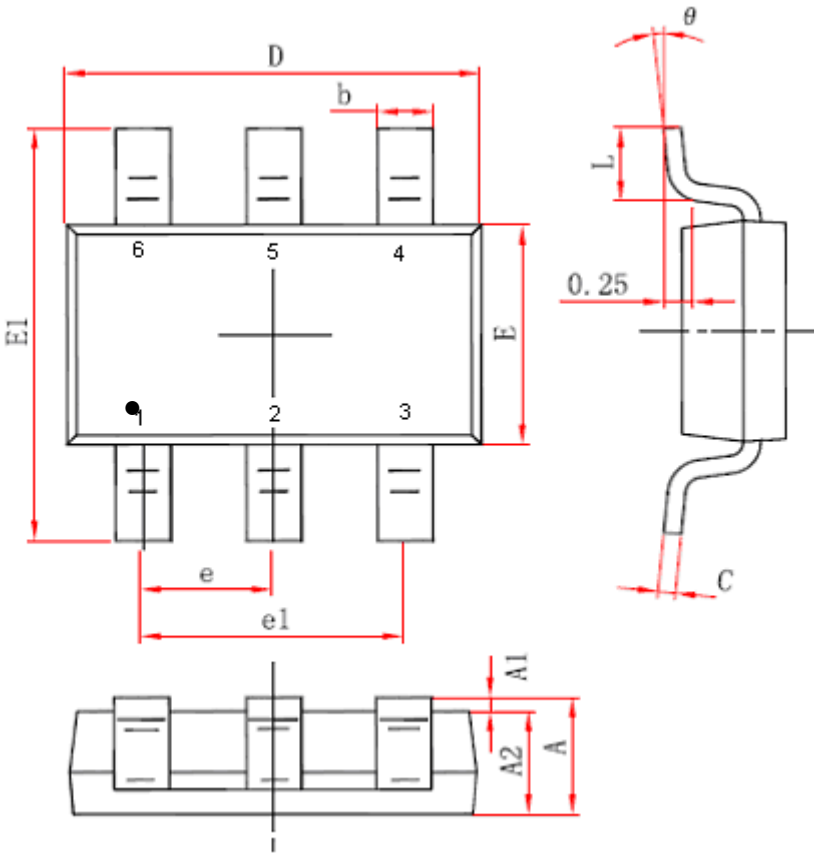
Maximum Drain Current vs JunctionTemperature



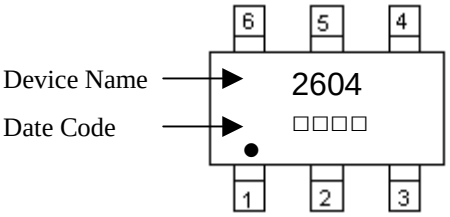
Typical Characteristics (Cont.)



TSOP-6 Dimension



Marking:



Style:
Pin 1. Drain (D)
Pin 2. Drain (D)
Pin 3. Gate (G)
Pin 4. Source (S)
Pin 5. Drain (D)
Pin 6. Drain (D)

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

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°