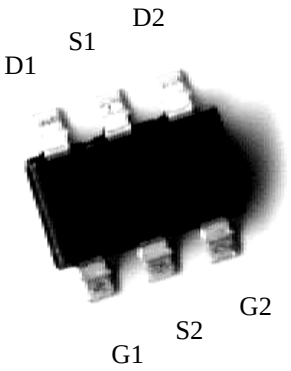
N- and P-Channel Enhancement Mode Power MOSFET

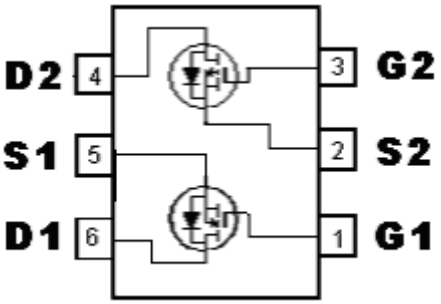
SOT-26



Features:

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

	N-CH	P-CH
BV_{DSS}	20V	-20V
I_D	4.3A(V_{GS}=4.5V)	-3.8A(V_{GS}=-4.5 V)
$R_{DSON(TYP.)}$	29mΩ (V_{GS}=4.5V)	42mΩ (V_{GS}=-4.5V)
	36mΩ (V_{GS}=2.5V)	54mΩ (V_{GS}=-2.5V)
	53mΩ (V_{GS}=1.8V)	64mΩ (V_{GS}=-1.8V)



G：Gate
S：Source
D：Drain

Ordering Information

Device	Package	Shipping
KTC6604N6	SOT-26 (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}	±8	±8	
Continuous Drain Current @T_A=25 °C (Note 1)	I_D	4.3	-3.8	A
Continuous Drain Current @T_A=70 °C (Note 1)		3.4	-3.0	
Pulsed Drain Current (Note 2)	I_{DM}	25	-22	
Total Power Dissipation (Note 1)	P_D	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

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=250μA
$V_{GS(th)}$	0.5	-	1.0	V	V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±8V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS}=20V, V_{GS}=0V
	-	-	10		V_{DS}=16V, V_{GS}=0V, Tj=70°C
*$R_{DS(ON)}$	-	29	40	mΩ	I_D=3A, V_{GS}=4.5V
	-	36	55		I_D=2A, V_{GS}=2.5V
	-	53	75		I_D=1.5A, V_{GS}=1.8V
*G_{FS}	-	6.2	-	S	V_{DS}=5V, I_D=3A
Dynamic					
Ciss	-	327	-	pF	V_{DS}=15V, V_{GS}=0V, f=1MHz
Coss	-	45	-		
Crss	-	42	-		
*$t_{d(ON)}$	-	5	-	ns	V_{DS}=10V, I_D=3A, V_{GS}=4.5V, R_G=3.3Ω
*t_r	-	15	-		
*$t_{d(OFF)}$	-	24.6	-		
*t_f	-	6.4	-		
*Qg	-	5.9	-	nC	V_{DS}=15V, I_D=3A, V_{GS}=4.5V
*Qgs	-	0.6	-		
*Qgd	-	2.0	-		
Source-Drain Diode					
*V_{SD}	-	0.79	1.2	V	V_{GS}=0V, I_S=1A
*trr	-	6.7	-	ns	I_F=3A, V_{GS}=0V, dI_F/dt=100A/μs
*Qrr	-	2.8	-	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}	-20	-	-	V	V_{GS}=0V, I_D=-250μA
$\Delta BV_{DSS}/\Delta Tj$	-	-0.01	-	V/°C	Reference to 25°C, I_D=-250μA
$V_{GS(th)}$	-0.4	-	-1.0	V	V_{DS}=V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±8V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS}=-20V, V_{GS}=0V
	-	-	-25		V_{DS}=-16V, V_{GS}=0V, Tj=70°C
*$R_{DS(ON)}$	-	42	55	mΩ	I_D=-3A, V_{GS}=-4.5V
	-	54	85		I_D=-2A, V_{GS}=-2.5V
	-	64	130		I_D=-1A, V_{GS}=-1.8V
*G_{FS}	-	9	-	S	V_{DS}=-5V, I_D=-3A
Dynamic					
Ciss	-	658	-	pF	V_{DS}=-15V, V_{GS}=0V, f=1MHz
Coss	-	72	-		
Crss	-	61	-		
*$t_{d(ON)}$	-	9.2	-	ns	V_{DS}=-10V, I_D=-3A, V_{GS}=-4.5V, R_G=3.3Ω
*t_r	-	18.8	-		
*$t_{d(OFF)}$	-	48.4	-		
*t_f	-	12	-		
*Qg	-	9.9	-	nC	V_{DS}=-15V, I_D=-3A, V_{GS}=-4.5V
*Qgs	-	1.2	-		
*Qgd	-	2.7	-		
Source-Drain Diode					
*V_{SD}	-	-0.79	-1	V	V_{GS}=0V, I_S=-1A
*trr	-	7.1	-	ns	I_F=-3A, V_{GS}=0V, dI_F/dt=100A/μs
*Qrr	-	2.7	-	nC	

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

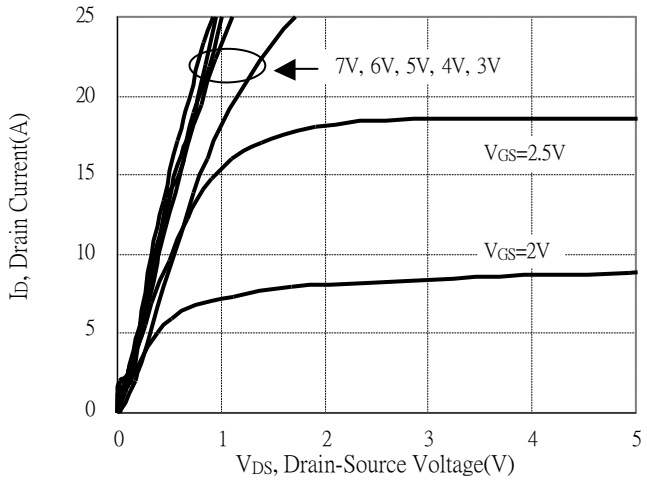
Thermal Data

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)	

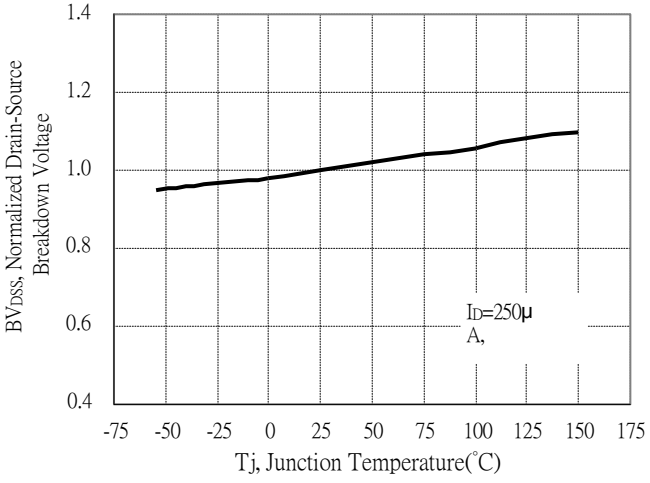
Note :.Surface mounted on 1 in² copper pad of FR-4 board, t≤5 sec; 180°C/W when mounted on minimum copper pad

N-channel Typical Characteristics

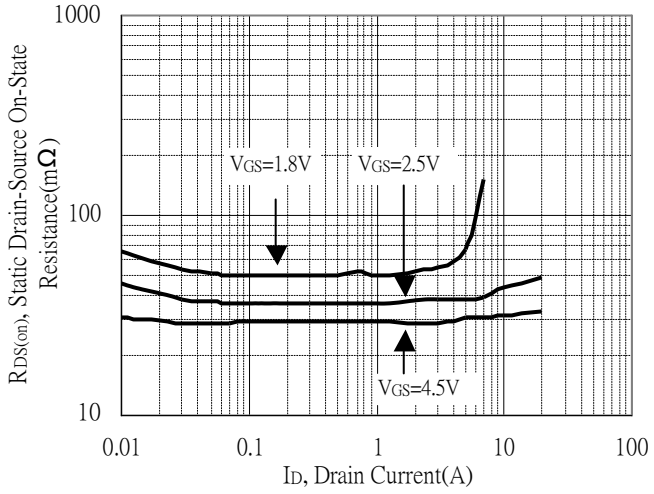
Typical Output Characteristics



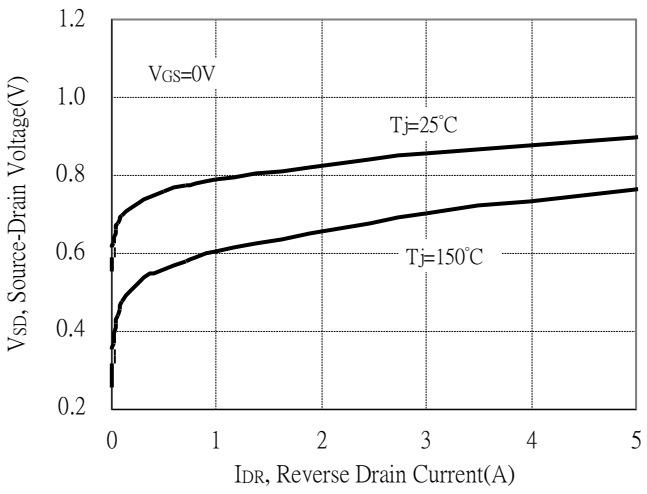
Brekdown Voltage vs Ambient Temperature



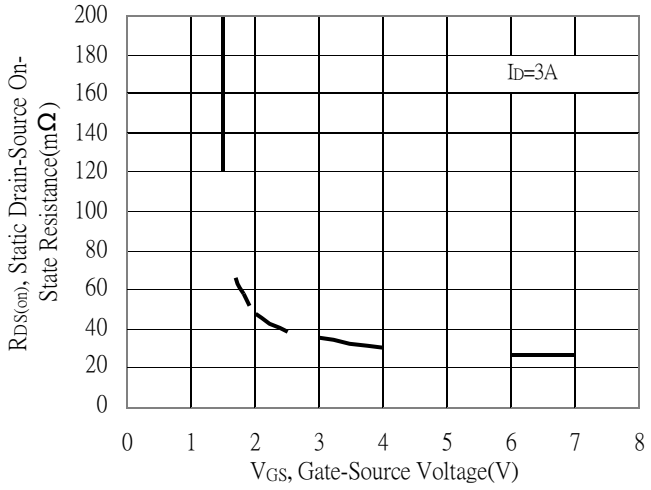
Static Drain-Source On-State resistance vs Drain Current



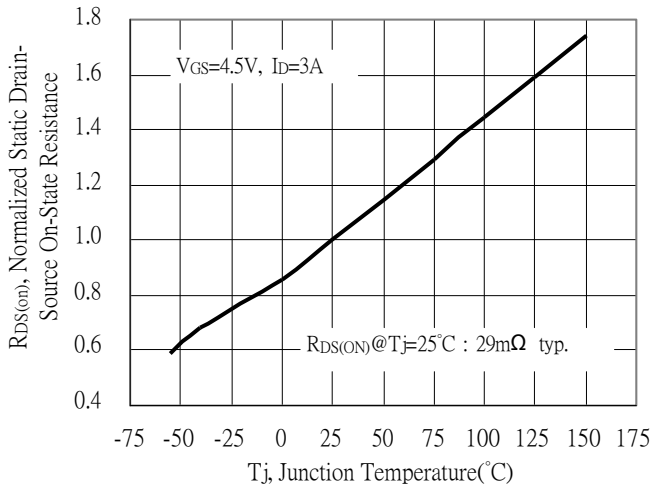
Reverse Drain Current vs Source-Drain Voltage



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

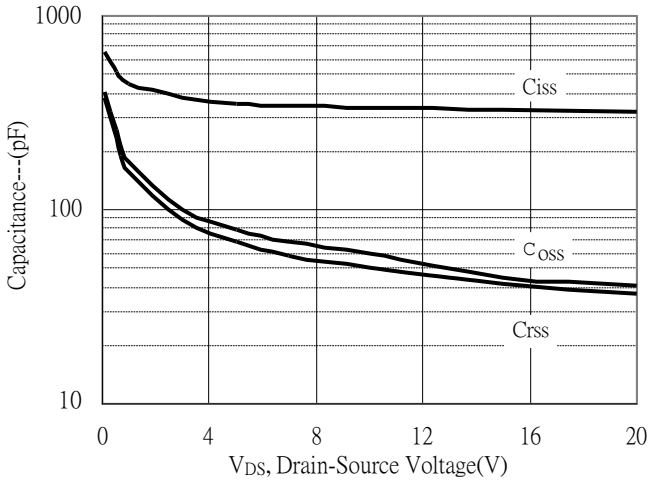


Drain-Source On-State Resistance vs Junction Tempearture

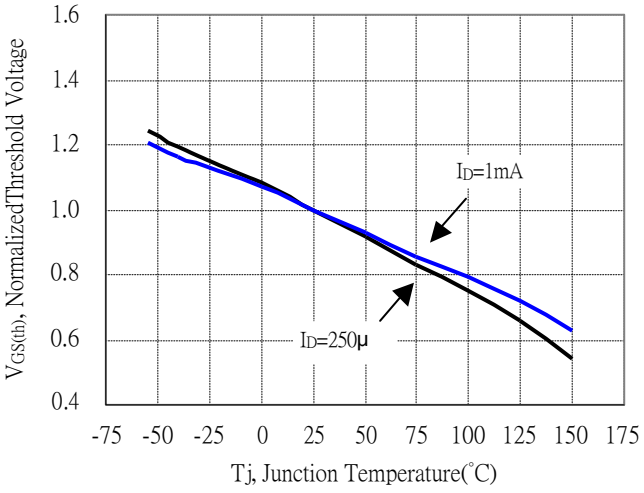


N-channel Typical Characteristics(Cont.)

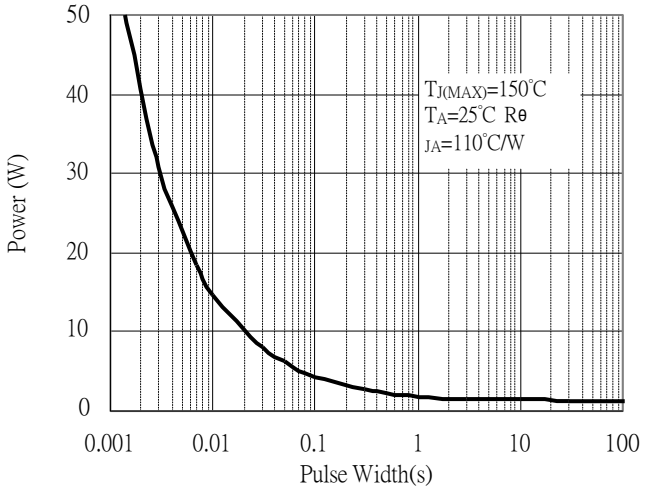
Capacitance vs Drain-to-Source Voltage



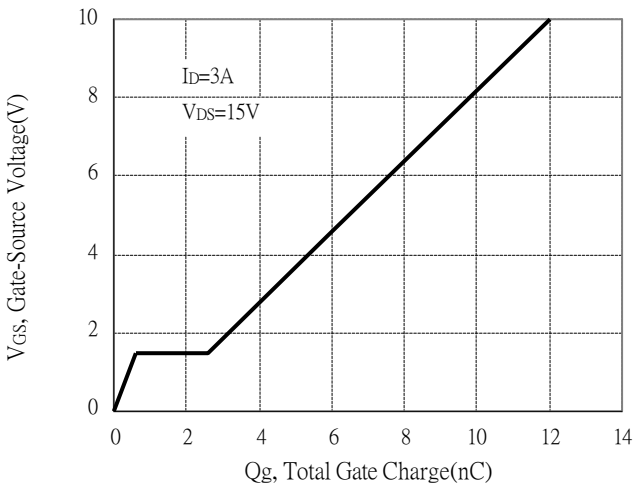
Threshold Voltage vs Junction Tempearture



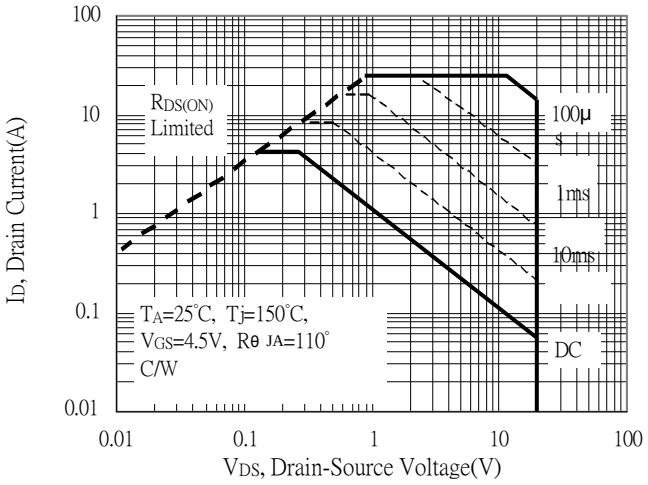
Single Pulse Power Rating, Junction to Ambient



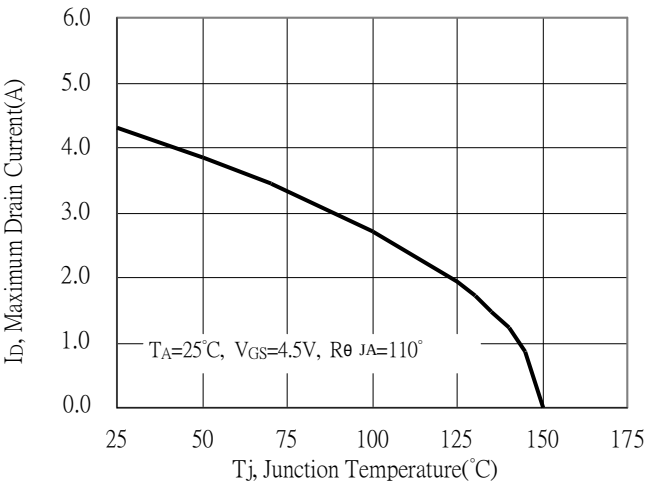
Gate Charge Characteristics



Maximum Safe Operating Area

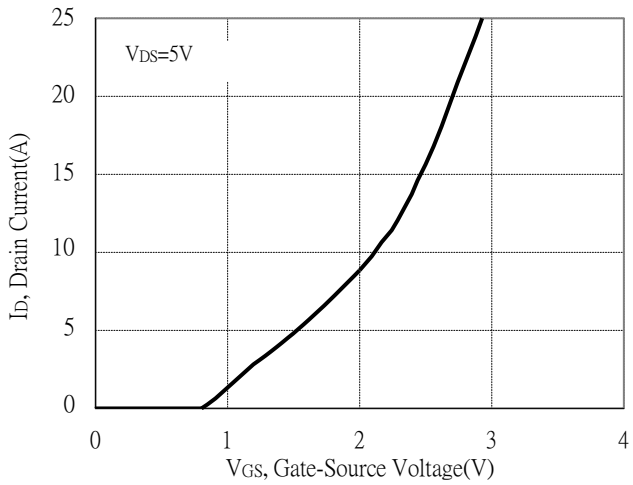


Maximum Drain Current vs JunctionTemperature

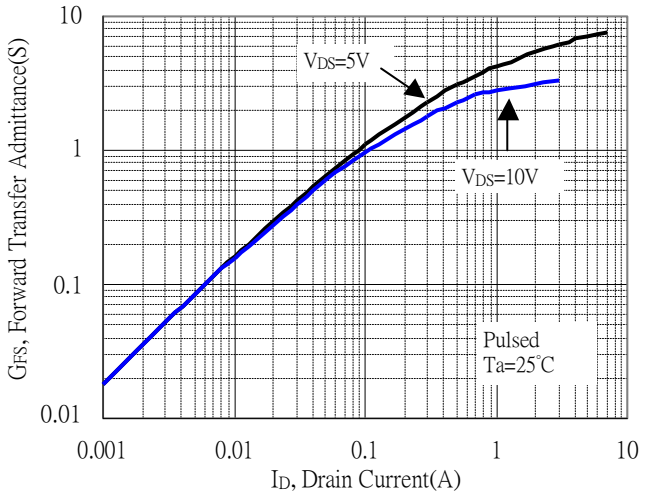


N-channel Typical Characteristics(Cont.)

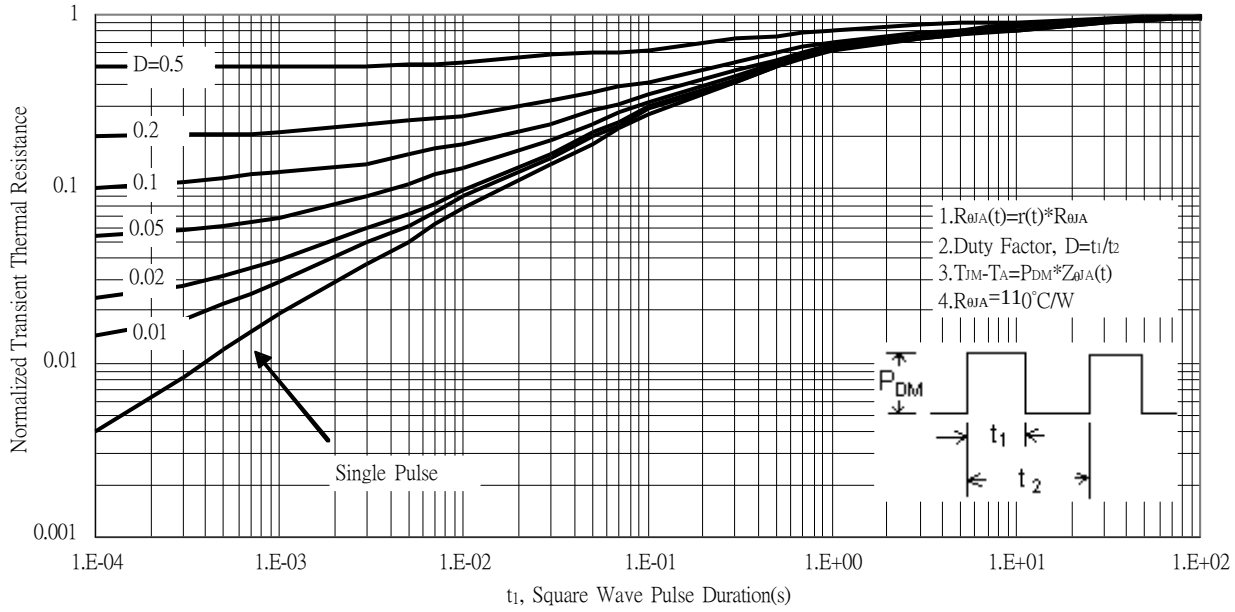
Typical Transfer Characteristics



Forward Transfer Admittance vs Drain Current

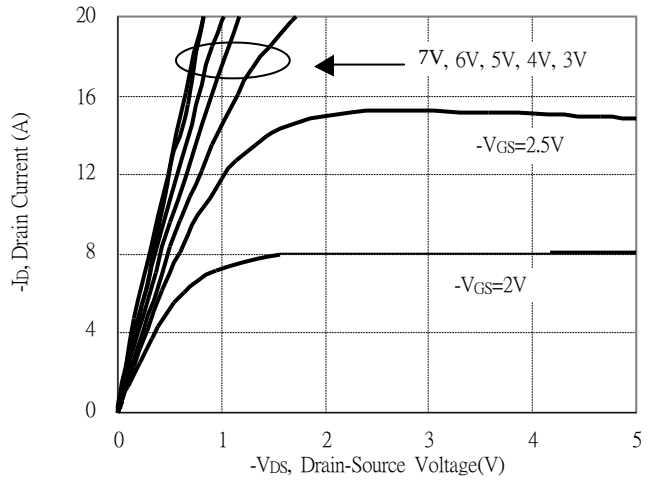


Transient Thermal Response Curves

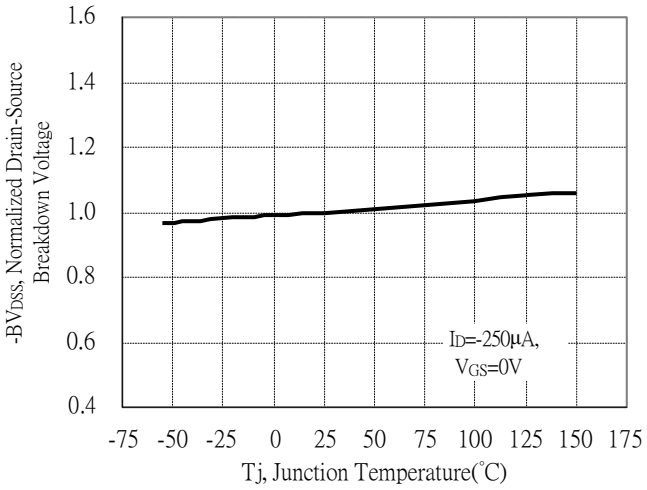


P-channel Typical Characteristics

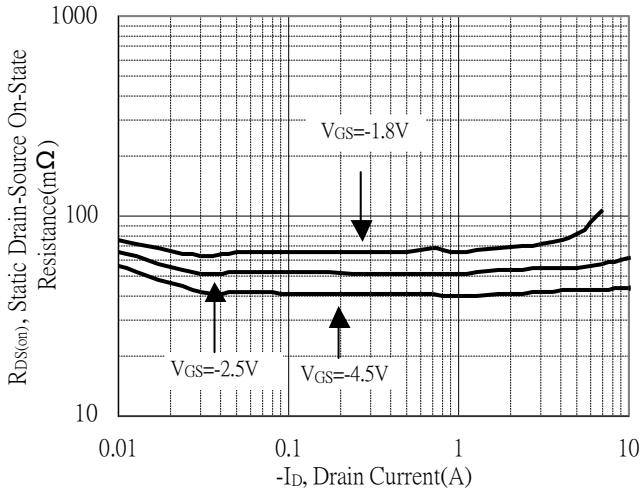
Typical Output Characteristics



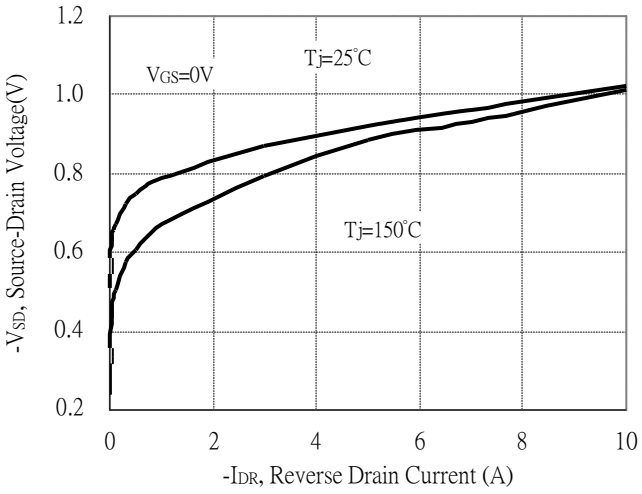
Brekdown Voltage vs Ambient Temperature



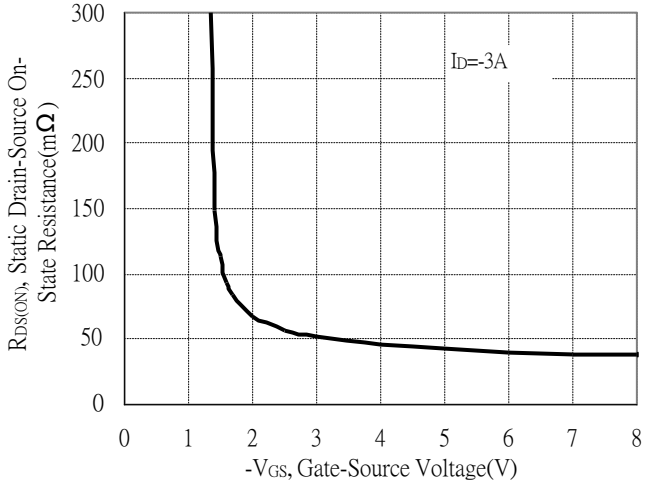
Static Drain-Source On-State resistance vs Drain Current



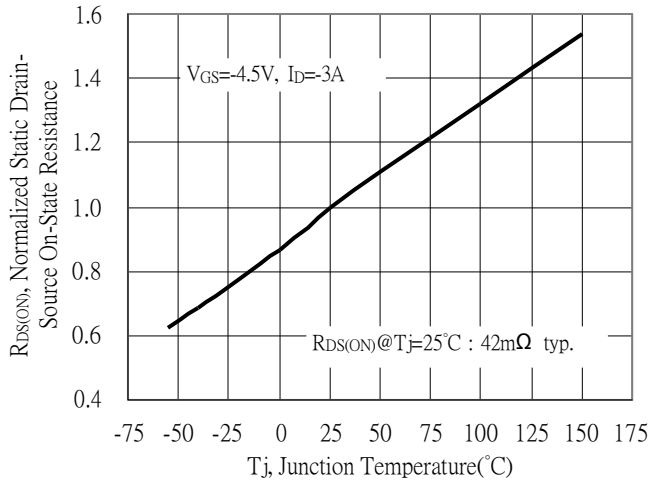
Reverse Drain Current vs Source-Drain Voltage



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

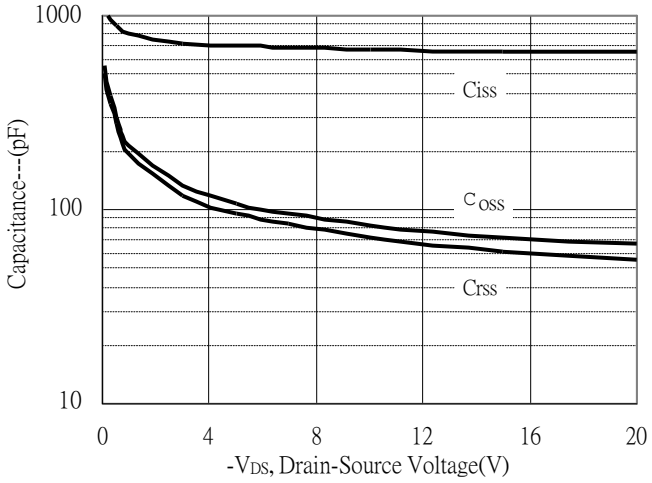


Drain-Source On-State Resistance vs Junction Tempearture

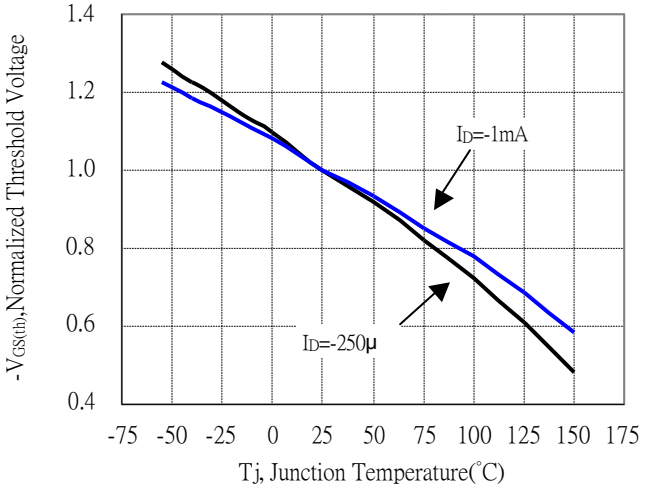


P-channel Typical Characteristics(Cont.)

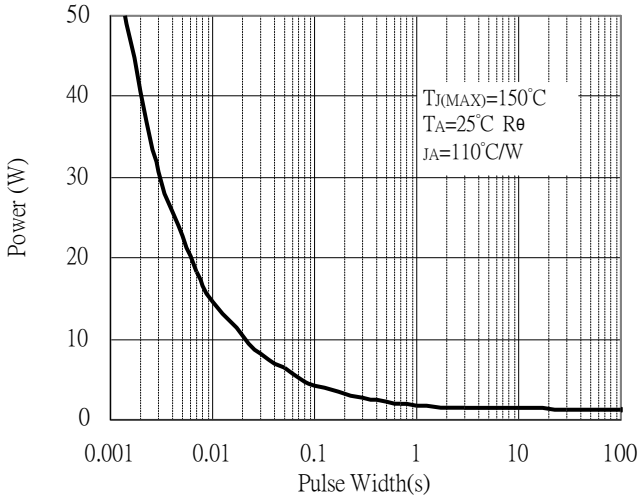
Capacitance vs Drain-to-Source Voltage



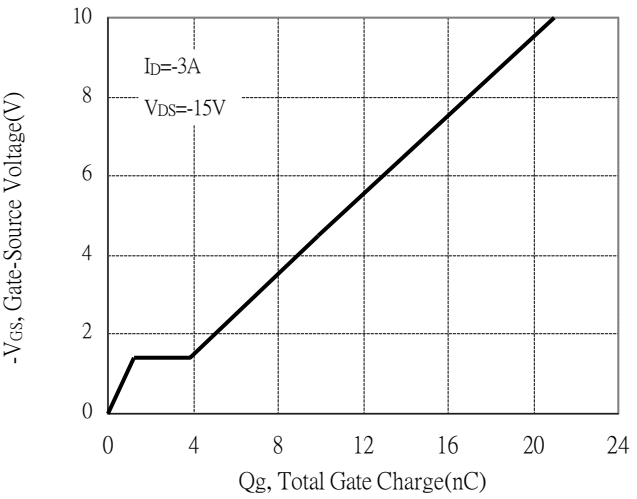
Threshold Voltage vs Junction Tempearture



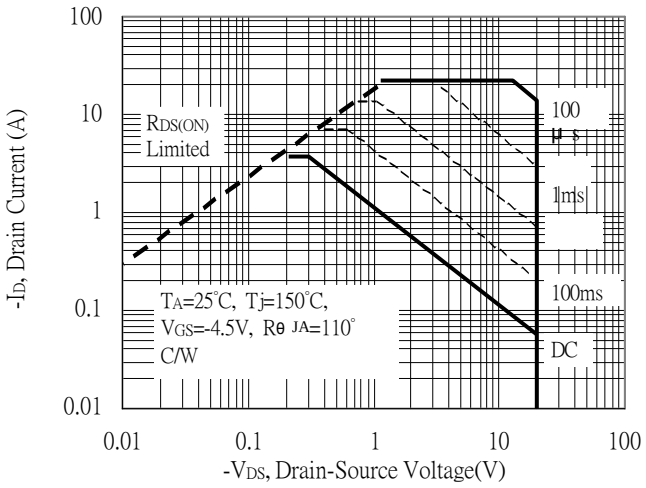
Single Pulse Power Rating, Junction to Ambient



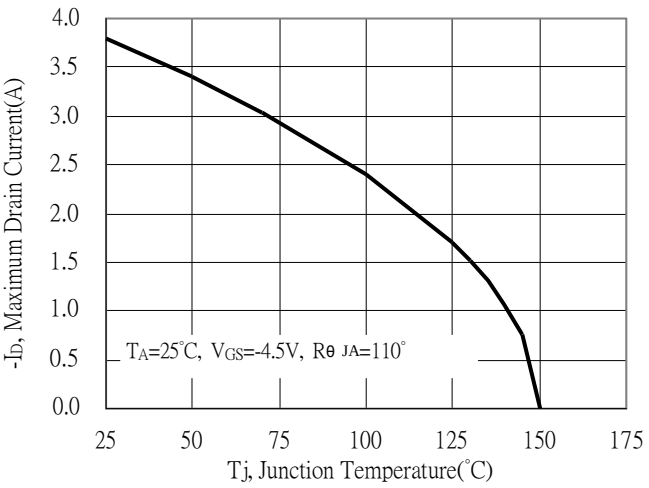
Gate Charge Characteristics



Maximum Safe Operating Area

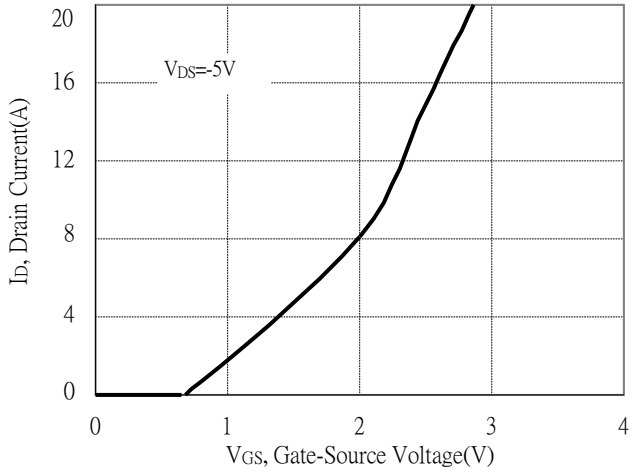


Maximum Drain Current vs JunctionTemperature

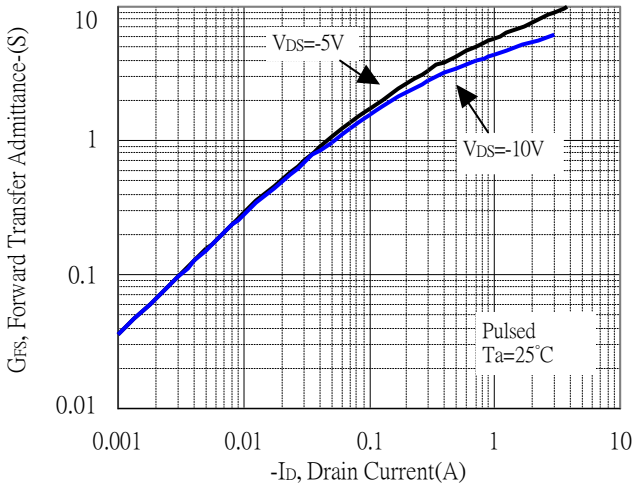


P-channel Typical Characteristics(Cont.)

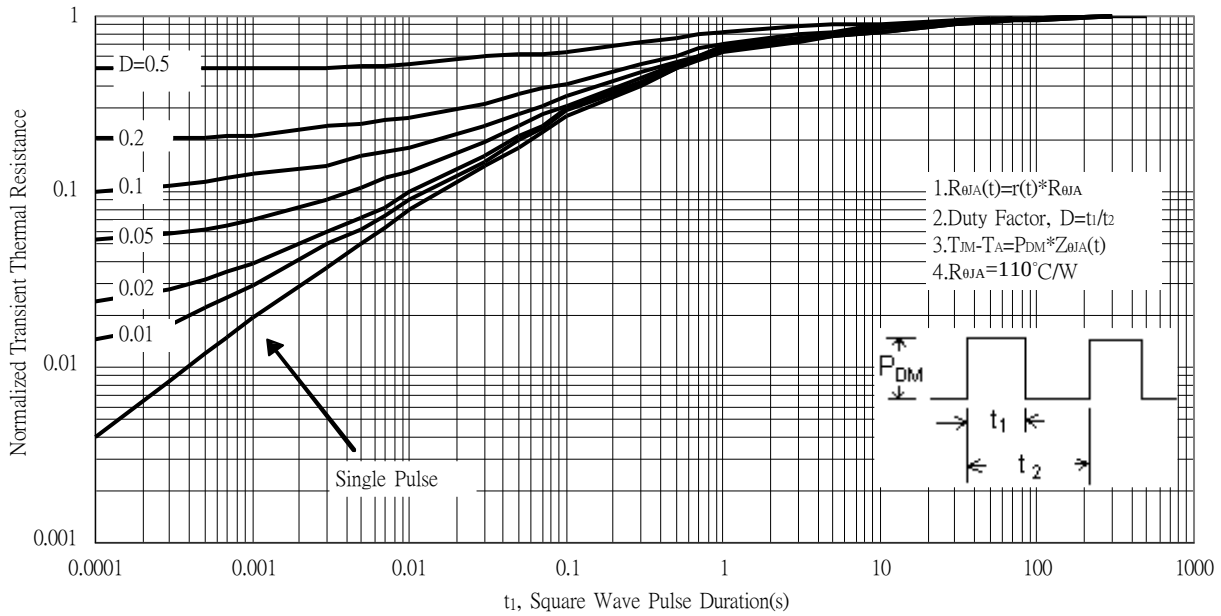
Typical Transfer Characteristics



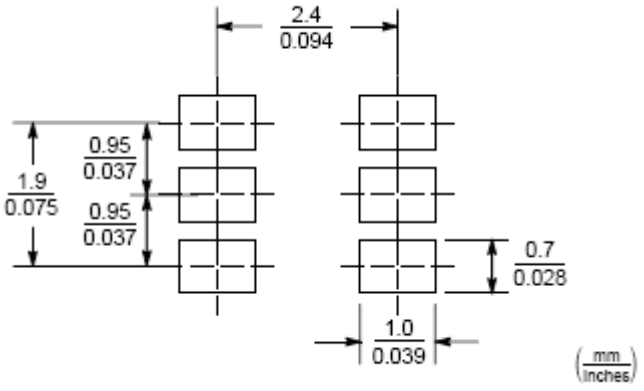
Forward Transfer Admittance vs Drain Current



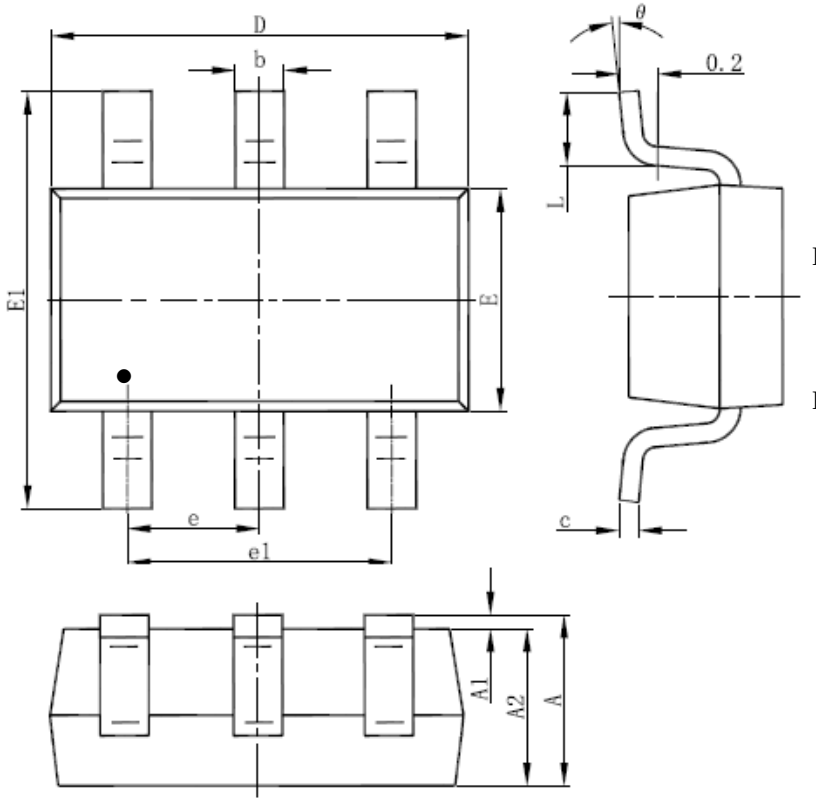
Transient Thermal Response Curves



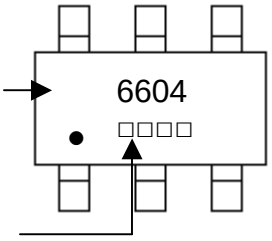
Recommended Soldering Footprint



SOT-26 Dimension



Marking:



6-Lead SOT-26 Plastic
Code: N6

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	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	θ	0°	8°	0°	8°