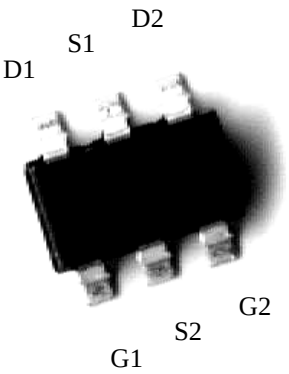
N- AND P-CHANNEL ENHANCEMENT MODE POWER MOSFET

Features:

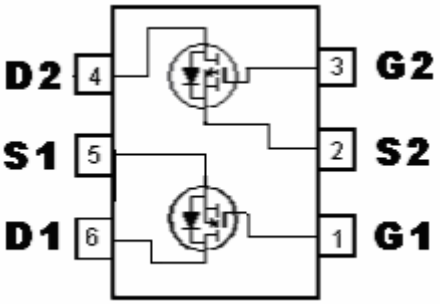
- Simple drive requirement
- Low gate charge
- Low on-resistance
- Fast switching speed
- Pb-free lead plating and halogen-free package

SOT-26



Description:

The KWC3585N6 consists of a N-channel and a P-channel enhancement-mode MOSFET in a single SOT-26 package, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.
The SOT-26 package is universally preferred for all commercial-industrial surface mount applications.



G：Gate
S：Source
D：Drain

	N-CH	P-CH
BV_{DSS}	20V	-20V
I_D	4.5A(V_{GS}=4.5V)	-3A(V_{GS}=-4.5 V)
$R_{DSON(TYP.)}$	27mΩ(V_{GS}=4.5V)	78mΩ(V_{GS}=-4.5V)
	37mΩ(V_{GS}=2.5V)	115mΩ(V_{GS}=-2.5V)
	82mΩ(V_{GS}=1.5V)	280mΩ(V_{GS}=-1.5V)

Ordering Information

Device	Package	Shipping
KWC3585N6	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}	±12	±12	V
Continuous Drain Current @T_A=25 °C (Note 1)	I_D	4.5	-3	A
Continuous Drain Current @T_A=70 °C (Note 1)	I_D	3.6	-2.4	A
Pulsed Drain Current (Note 2)	I_{DM}	20	-20	A
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

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	20	-	-	V	V_{GS}=0, 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}=0
I_{DSS}	-	-	1	μA	V_{DS}=20V, V_{GS}=0
	-	-	10		V_{DS}=16V, V_{GS}=0, Tj=70°C
*$R_{DS(ON)}$	-	27	40	mΩ	I_D=3.5A, V_{GS}=4.5V
	-	37	50		I_D=1.2A, V_{GS}=2.5V
	-	82	105		I_D=0.5A, V_{GS}=1.5V
*G_{FS}	-	7	-	S	V_{DS}=5V, I_D=3A
Dynamic					
Ciss	-	423	-	pF	V_{DS}=20V, V_{GS}=0, f=1MHz
Coss	-	50	-		
Crss	-	48	-		
*$t_{d(ON)}$	-	6	-	ns	V_{DS}=15V, I_D=1A, V_{GS}=5V, R_G=3.3Ω, R_D=15Ω
*t_r	-	8	-		
*$t_{d(OFF)}$	-	11	-		
*t_f	-	10	-		
*Qg	-	6	-	nC	V_{DS}=16V, I_D=3A, V_{GS}=4.5V
*Qgs	-	0.8	-		
*Qgd	-	2.5	-		
Source-Drain Diode					
*V_{SD}	-	0.77	1.2	V	V_{GS}=0V, I_S=1.2A
*trr	-	16	-	ns	I_S=3A, V_{GS}=0V, dI/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}	-20	-	-	V	V_{GS}=0, I_D=-250μA
$\Delta BV_{DSS}/\Delta Tj$	-	-0.01	-	V/°C	Reference to 25°C, I_D=-1mA
$V_{GS(th)}$	-	-0.8	-1.2	V	V_{DS}=V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±12V, V_{DS}=0
I_{DSS}	-	-	-1	μA	V_{DS}=-20V, V_{GS}=0
	-	-	-25		V_{DS}=-16V, V_{GS}=0, Tj=70°C
*$R_{DS(ON)}$	-	78	105	mΩ	I_D=-2.5A, V_{GS}=-4.5V
	-	115	150		I_D=-2A, V_{GS}=-2.5V
	-	280	350		I_D=-0.5A, V_{GS}=-1.5V
*G_{FS}	-	5	-	S	V_{DS}=-5V, I_D=-2A
Dynamic					
Ciss	-	429	-	pF	V_{DS}=-20V, V_{GS}=0, f=1MHz
Coss	-	45	-		
Crss	-	41	-		
*$t_{d(ON)}$	-	6	-	ns	V_{DS}=-10V, I_D=-1A, V_{GS}=-10V, R_G=3.3Ω, R_D=10Ω
*t_r	-	17	-		
*$t_{d(OFF)}$	-	16	-		
*t_f	-	5	-		
*Qg	-	6	-	nC	V_{DS}=-16V, I_D=-2A, V_{GS}=-4.5V
*Qgs	-	0.8	-		
*Qgd	-	2.4	-		
Source-Drain Diode					
*V_{SD}	-	-0.82	-1.2	V	V_{GS}=0V, I_S=-1.2A
*trr	-	20	-	ns	I_S=-2A, V_{GS}=0V, dI/dt=100A/μs
*Qrr	-	15	-	nC	

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

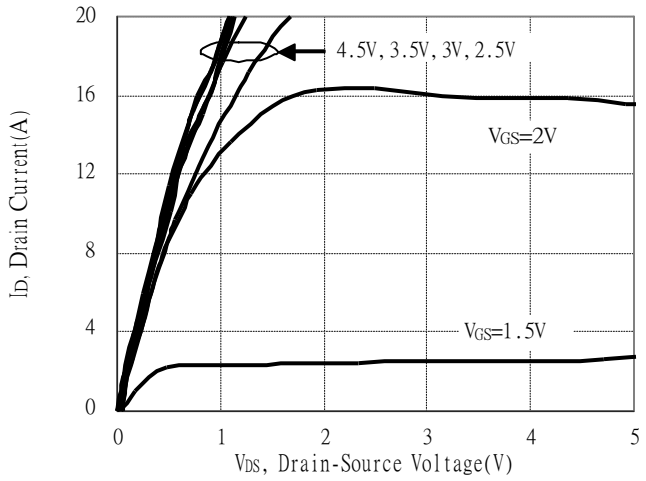
Thermal Data

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)	°C/W

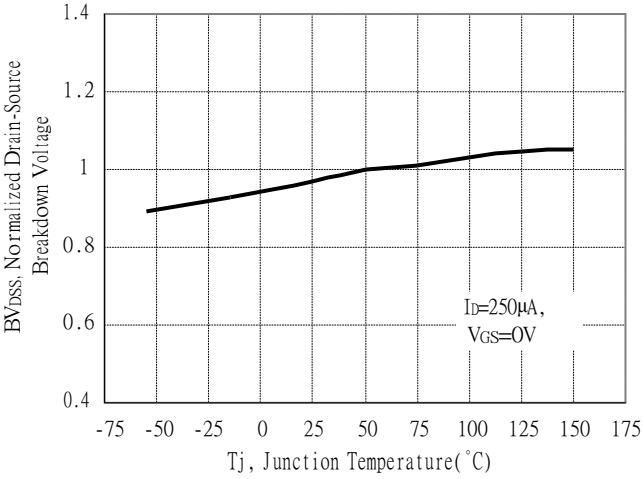
Note :.Surface mounted on 1 in² copper pad of FR-4 board, t≤5 sec; 180°C/W when mounted on minimum copper pad

N-channel Typical Characteristics

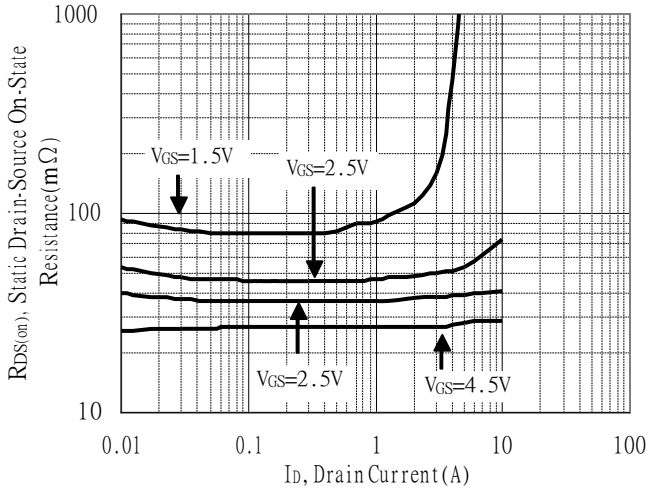
Typical Output Characteristics



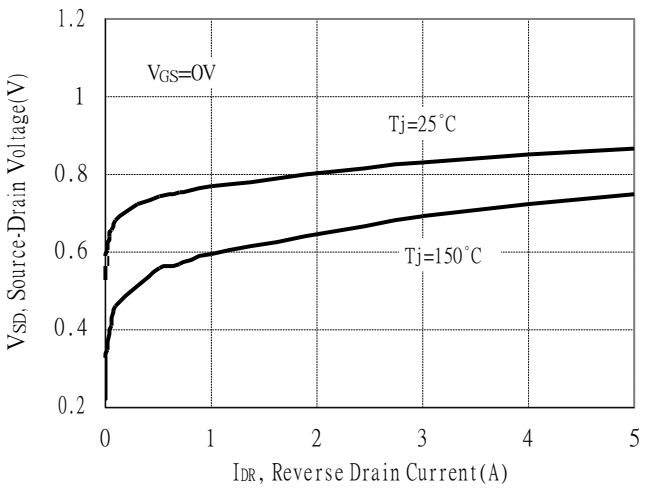
Brekdown Voltage vs Ambient Temperature



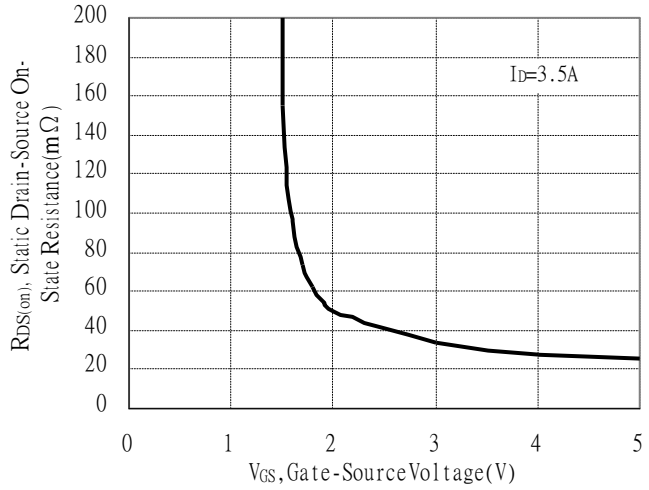
Static Drain-Source On-State resistance vs Drain Current



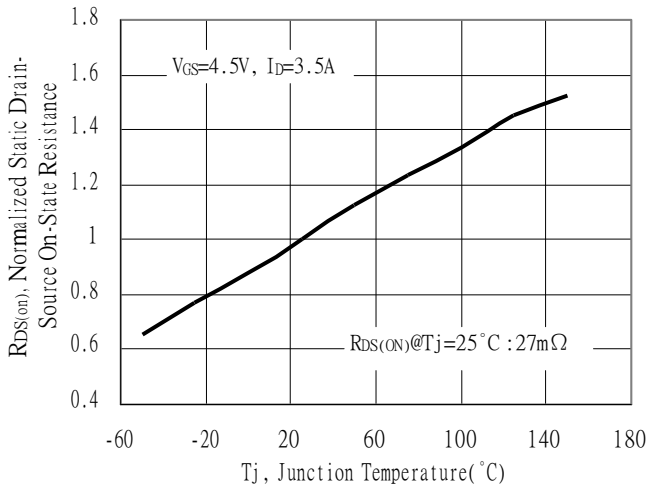
Reverse Drain Current vs Source-Drain Voltage



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

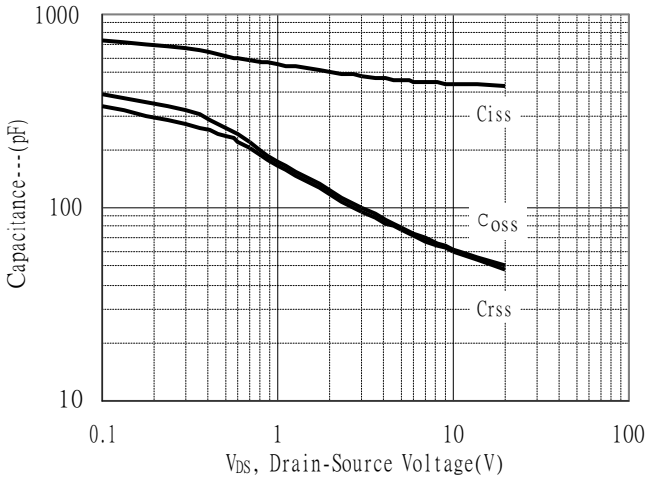


Drain-Source On-State Resistance vs Junction Tempearture

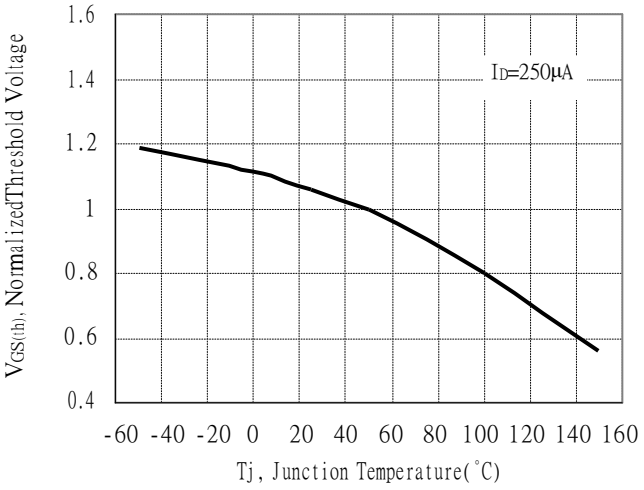


N-channel Typical Characteristics(Cont.)

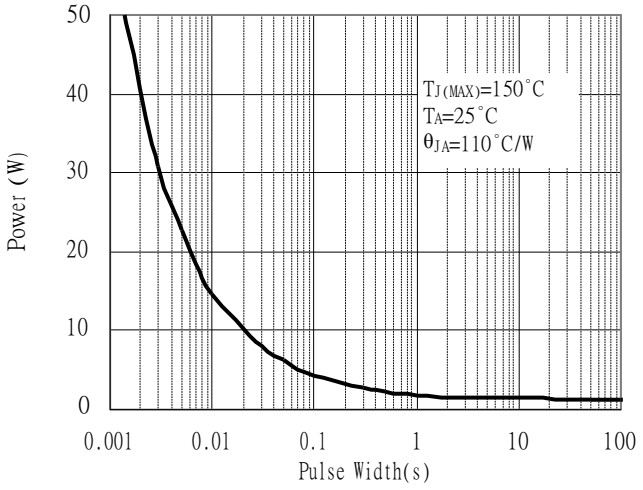
Capacitance vs Drain-to-Source Voltage



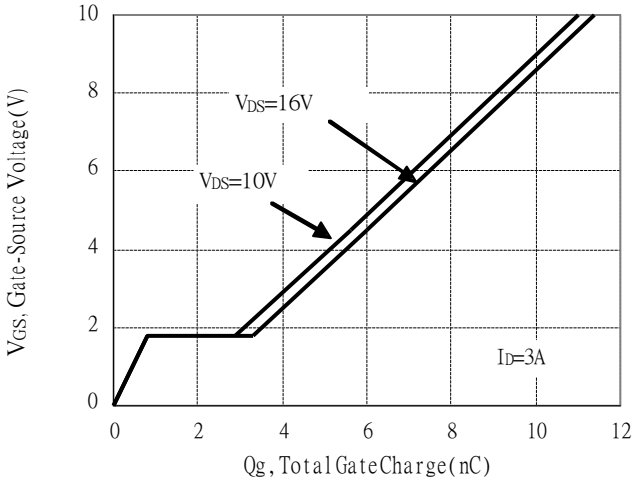
Threshold Voltage vs Junction Tempearture



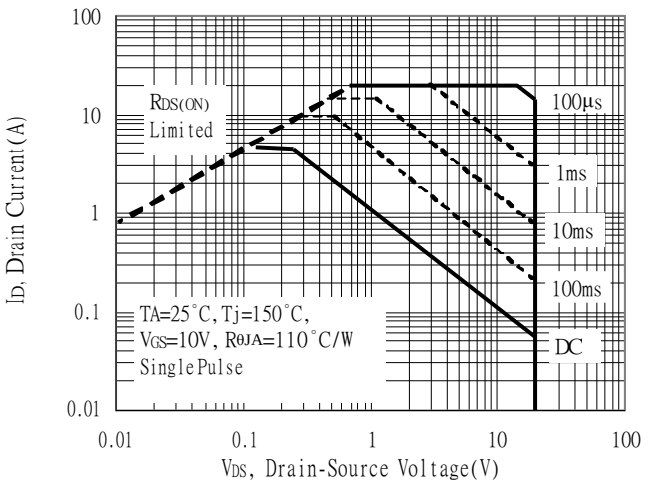
SinglePulsePowerRating, JunctiontoAmbient



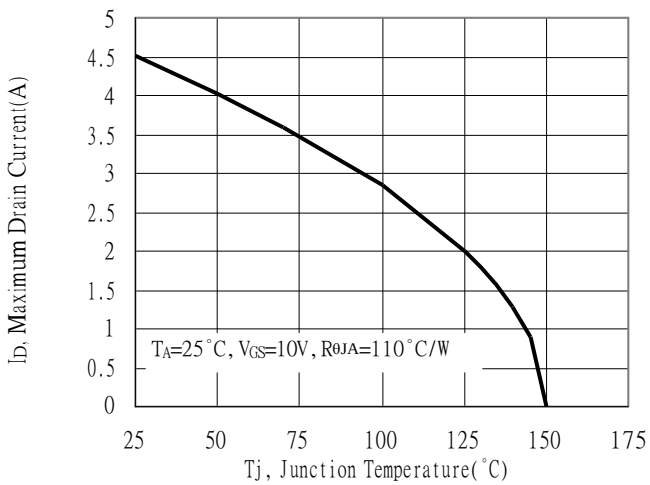
Gate Charge Characteristics



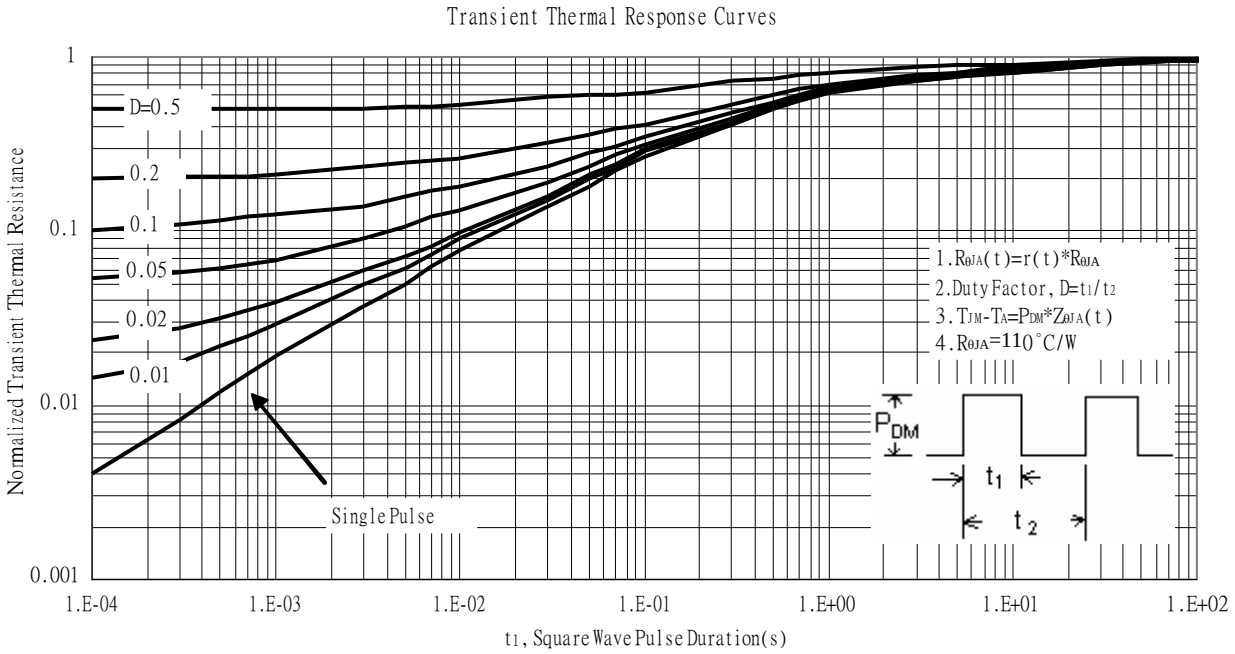
Maximum Safe Operating Area



Maximum Drain Current vs JunctionTemperature

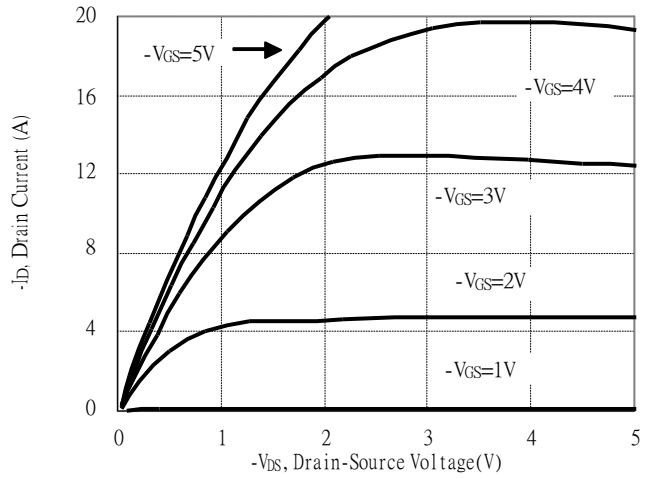


N-channel Typical Characteristics(Cont.)

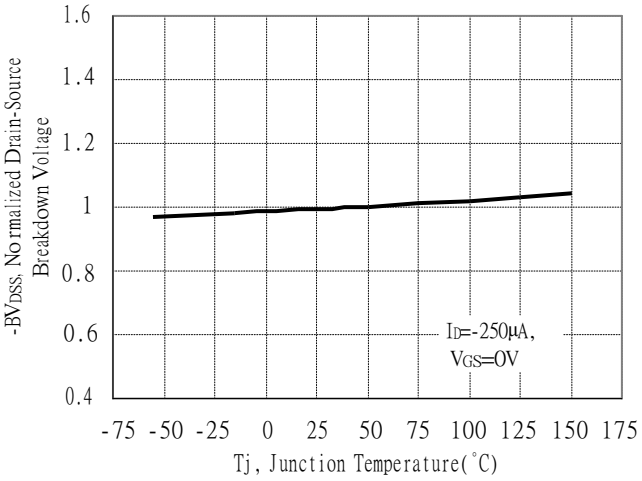


P-channel Typical Characteristics

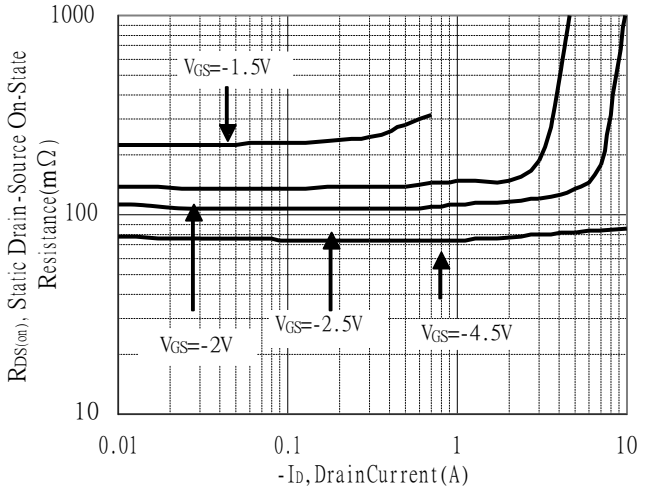
Typical Output Characteristics



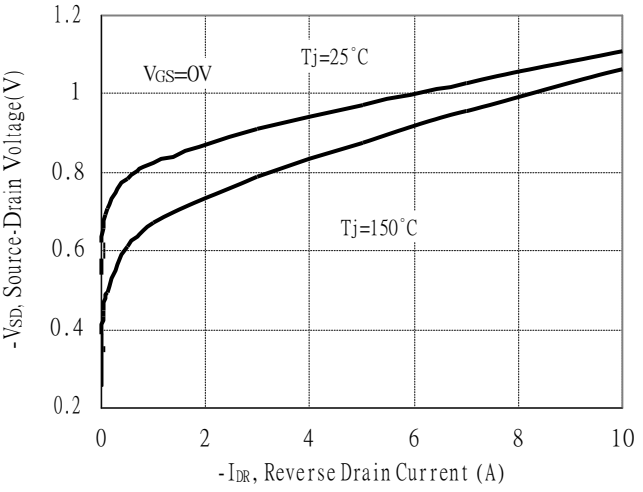
Brekdown Voltage vs Ambient Temperature



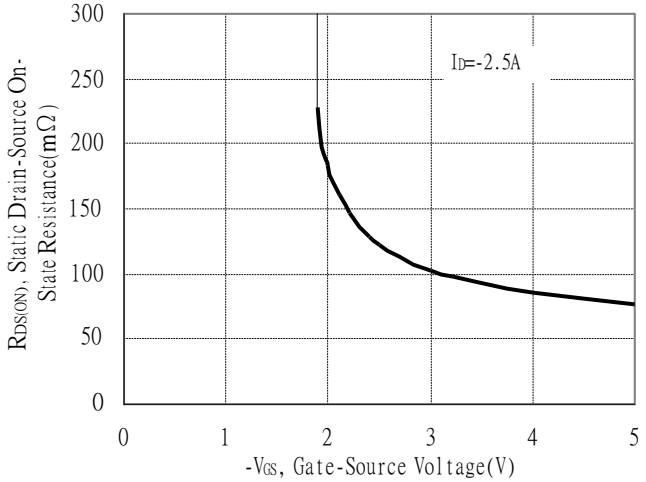
Static Drain-Source On-State resistance vs Drain Current



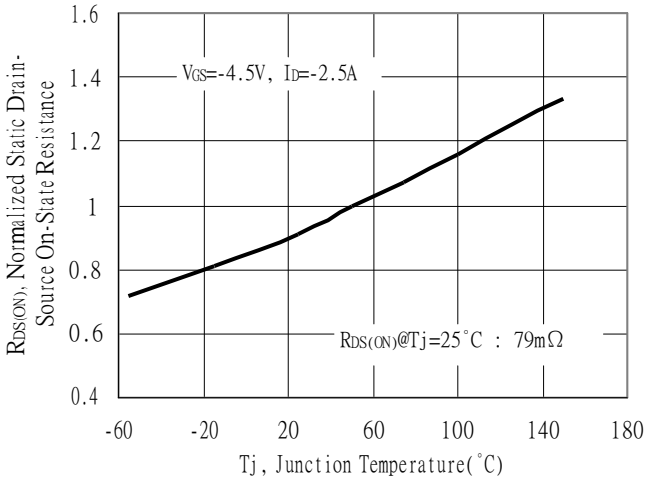
Reverse Drain Current vs Source-Drain Voltage



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

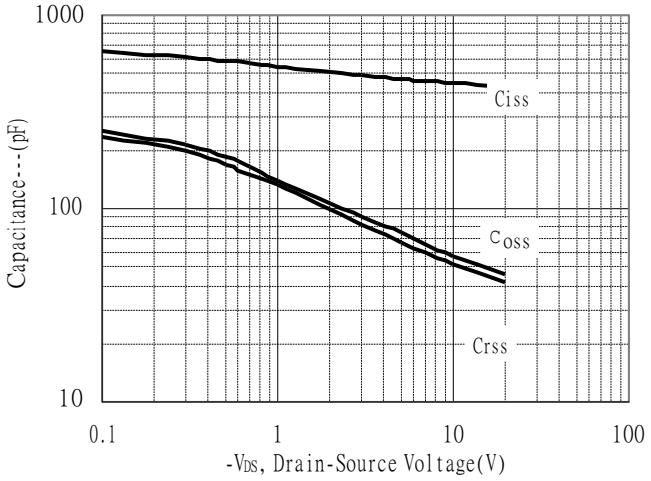


Drain-Source On-State Resistance vs Junction Tempearture

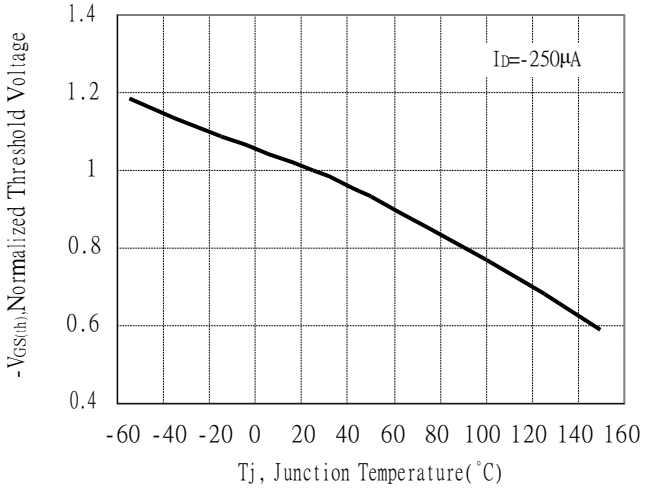


P-channel Typical Characteristics(Cont.)

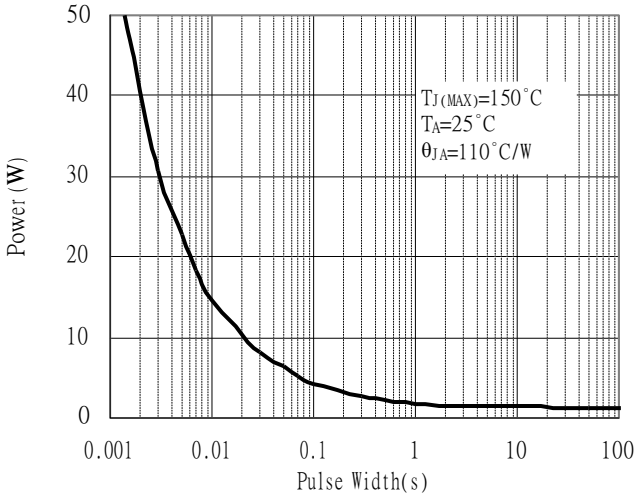
Capacitance vs Drain-to-Source Voltage



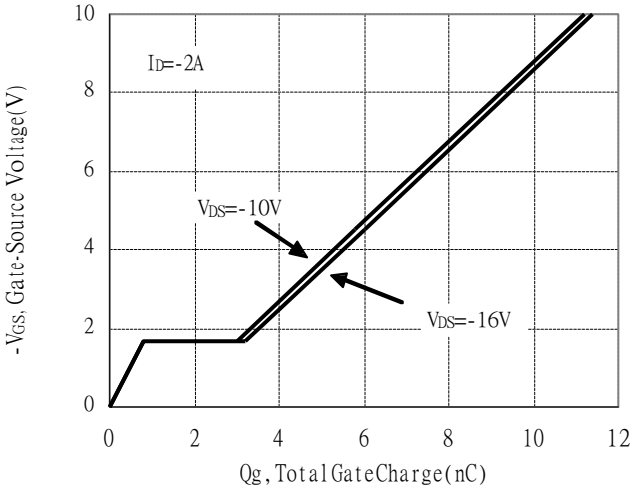
Threshold Voltage vs Junction Tempearture



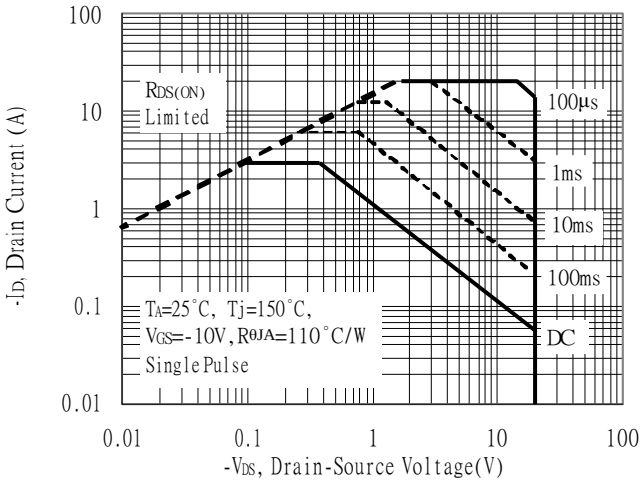
SinglePulsePowerRating,JunctiontoAmbient



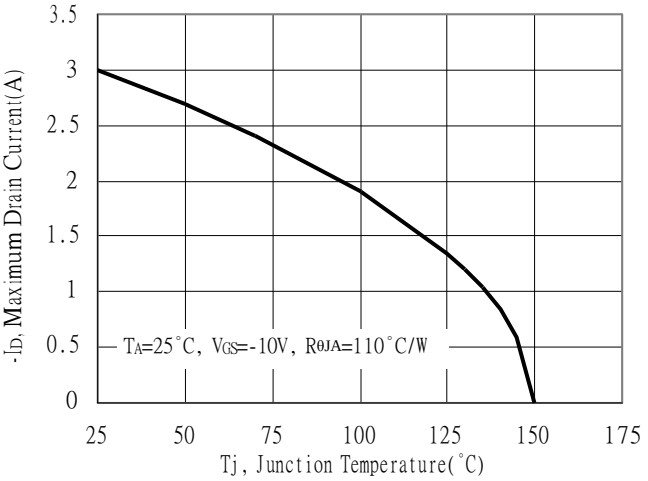
Gate Charge Characteristics



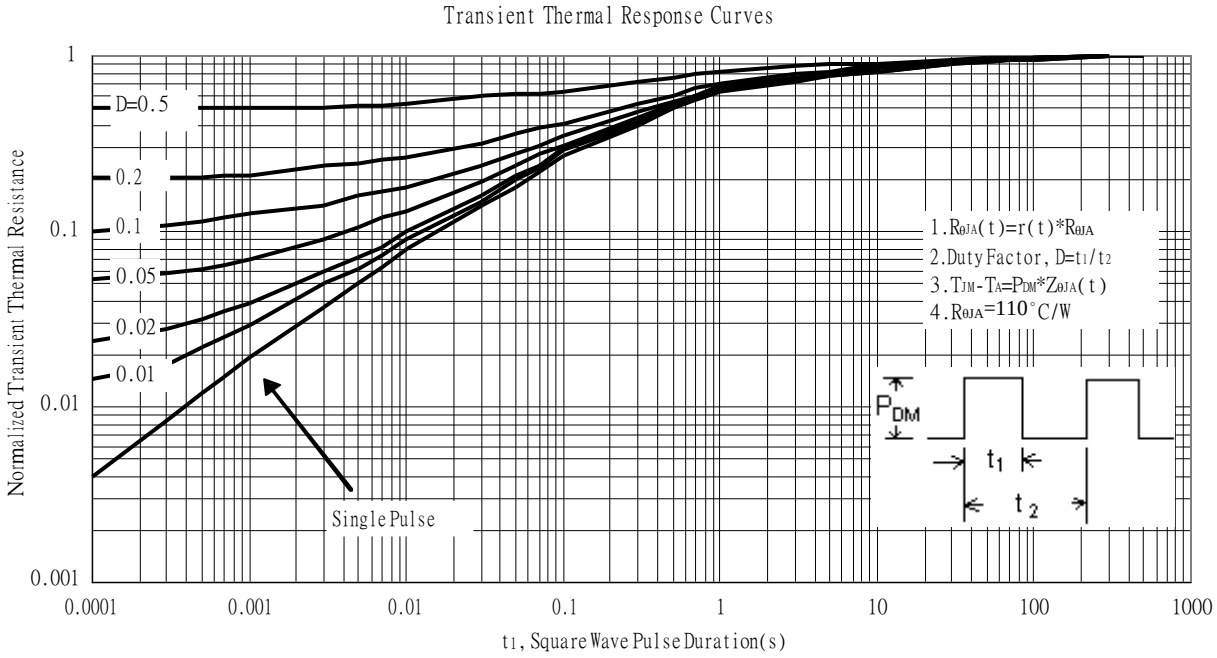
Maximum Safe Operating Area



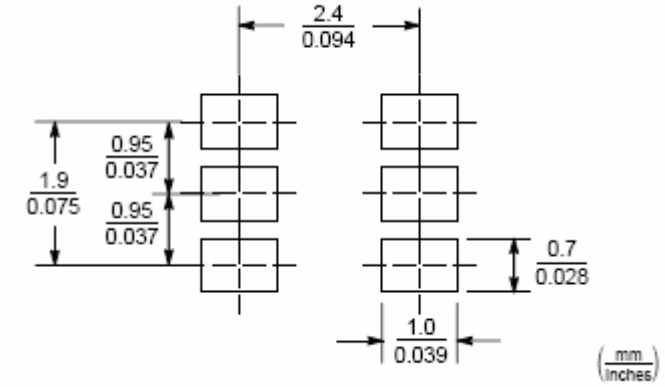
Maximum Drain Current vs JunctionTemperature



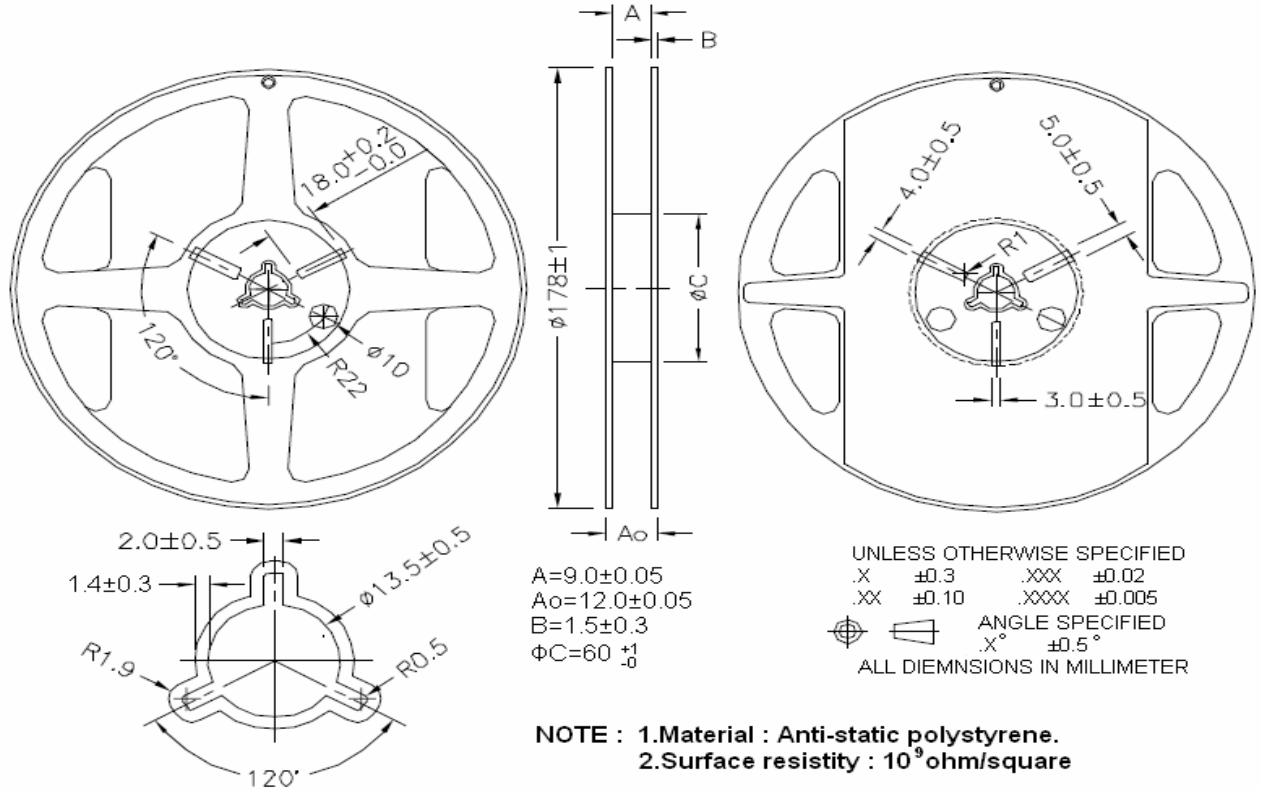
P-channel Typical Characteristics(Cont.)



Recommended Soldering Footprint

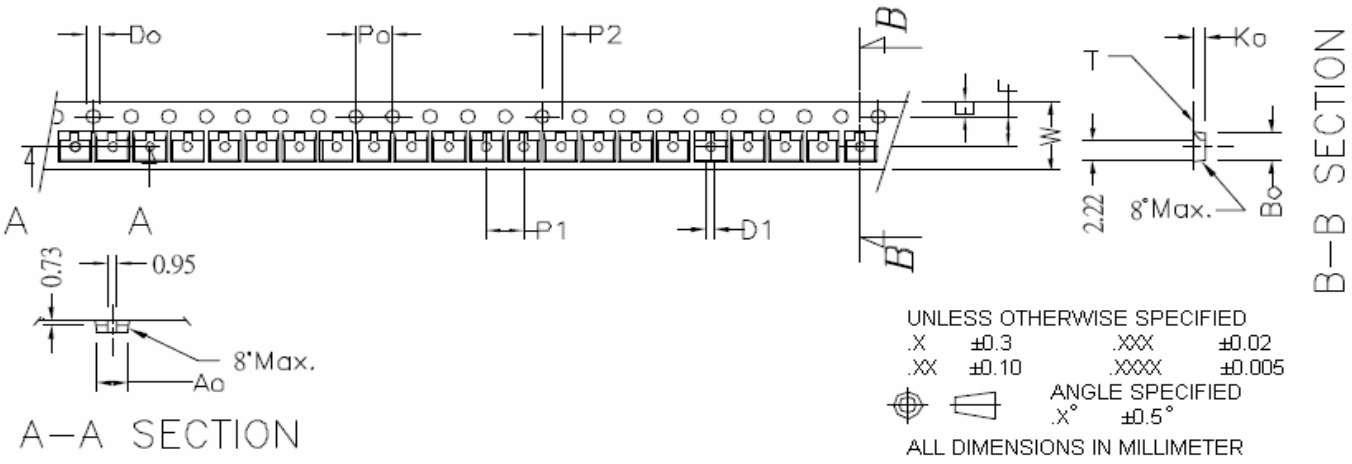


Reel Dimension



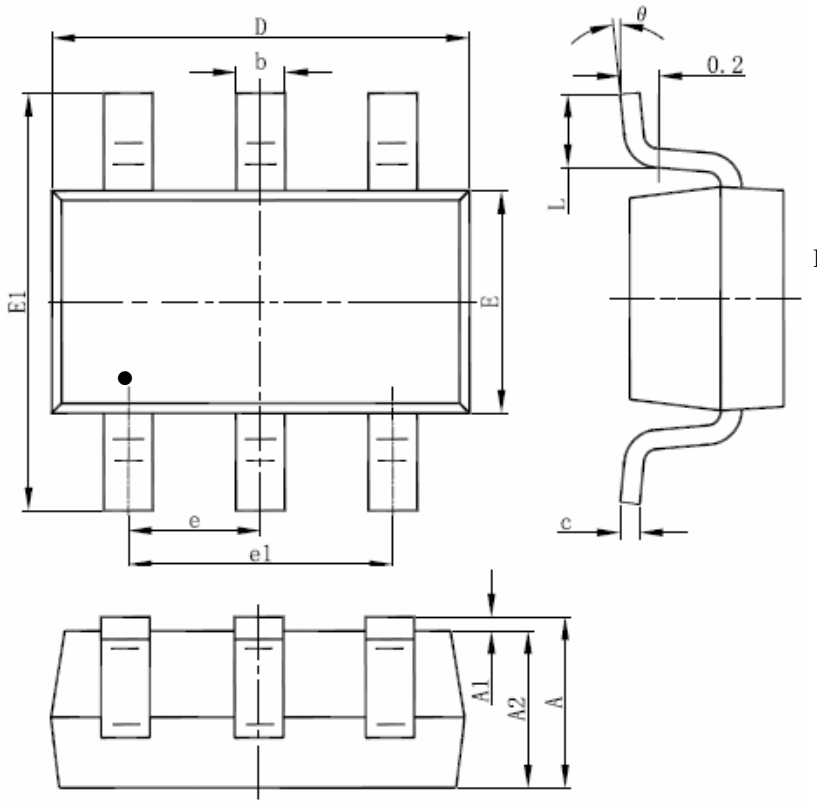
NOTE : 1.Material : Anti-static polystyrene.
2.Surface resistity : 10^9 ohm/square

Carrier Tape Dimension

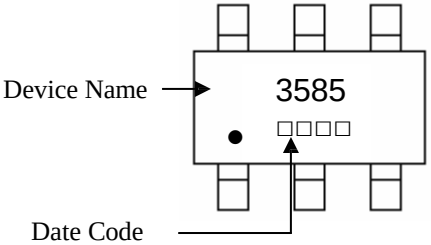


symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	3.20±0.1	3.00±0.1	1.33±0.1	4.0±0.1	4.0±0.10	2.0±0.05	0.20±0.02
symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	3.5±0.05	1.50±0.10	1.0±0.25	$8.0^{+0.3}_{-0.1}$	40.0±0.2	

SOT-26 Dimension



Marking:



6-Lead SOT-26 Plastic
Surface Mounted Package
Package Code: N6

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)

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°