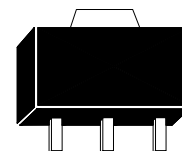


30V N-Channel Enhancement Mode MOSFET

Features:

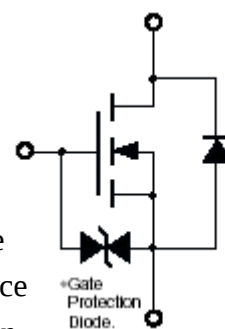
- Simple drive requirement
- Small package outline
- ESD protected gate
- Pb-free lead plating and halogen-free package



G D S

SOT-89

BV_{DSS}	30V
$I_D@V_{GS}=10V, T_A=25^{\circ}C$	7A
$R_{DS(on)}@V_{GS}=10V, I_D=5A$	15.3m Ω (typ)
$R_{DS(on)}@V_{GS}=4.5V, I_D=4A$	19.4m Ω (typ)



G : Gate
S : Source
D : Drain

Ordering Information

Device	Package	Shipping
KWB020N03KM3	SOT-89 (Pb-free lead plating and halogen-free package)	1000 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 @ T _A =25°C, V _{GS} =10V (Note 3)	I _D	7	A
Continuous Drain Current @ T _A =70°C, V _{GS} =10V (Note 3)		5.6	
Pulsed Drain Current (Notes 1, 2)	I _{DM}	42	
Maximum Power Dissipation@ T _A =25°C (Note 3)	P _D	2	W
Linear Derating Factor		0.016	W/°C
Operating Junction and Storage Temperature Range	T _j ; T _{stg}	-55~+150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient, max (Note 3)	R _{θJA}	62.5	°C/W
Thermal Resistance, Junction-to-Case, max	R _{θJC}	20	

Note : 1. Pulse width limited by maximum junction temperature.

2. Pulse width ≤ 300μs, duty cycle ≤ 2%.

3. Surface mounted on 1 in² copper pad of FR-4 board; 270°C/W when mounted on minimum copper pad

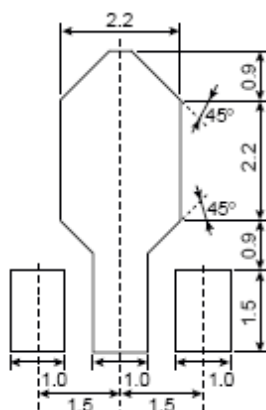
Electrical Characteristics (T_j=25°C, unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	30	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	1.0	-	2.5		V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±10	μA	V _{GS} =±16V, V _{DS} =0V
I _{DSS}	-	-	1		V _{DS} =30V, V _{GS} =0V
	-	-	25		V _{DS} =24V, V _{GS} =0V (T _j =70°C)
*R _{DS(ON)}	-	15.3	20	mΩ	V _{GS} =10V, I _D =5A
	-	19.4	26		V _{GS} =4.5V, I _D =4A
*G _{FS}	-	4.5	-	S	V _{DS} =10V, I _D =4A
Dynamic					
C _{iss}	-	450	-	pF	V _{DS} =15V, V _{GS} =0V, f=1MHz
C _{oss}	-	79	-		
C _{rss}	-	60	-		
t _{d(ON)}	-	5.8	-	ns	V _{DS} =15V, I _D =1A, V _{GS} =10V, R _G =6Ω
t _r	-	18.6	-		
t _{d(OFF)}	-	33.8	-		
t _f	-	11.8	-		

Qg	-	11.6	-	nC	V _{DS} =15V, I _D =5A, V _{GS} =10V
Qgs	-	1.2	-		
Qgd	-	3.8	-		
Source-Drain Diode					
*I _S	-	-	2.3	A	
*I _{SM}	-	-	9.2		
*V _{SD}	-	0.79	1.2	V	V _{GS} =0V, I _S =2A
T _{rr}	-	11	-	ns	V _{GS} =0V, I _F =2.3A, dI _F /dt=100A/μs
Q _{rr}	-	4	-	nC	

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

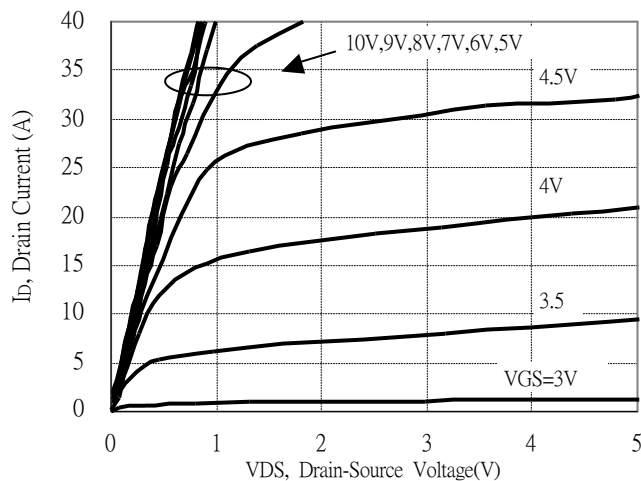
Recommended soldering footprint



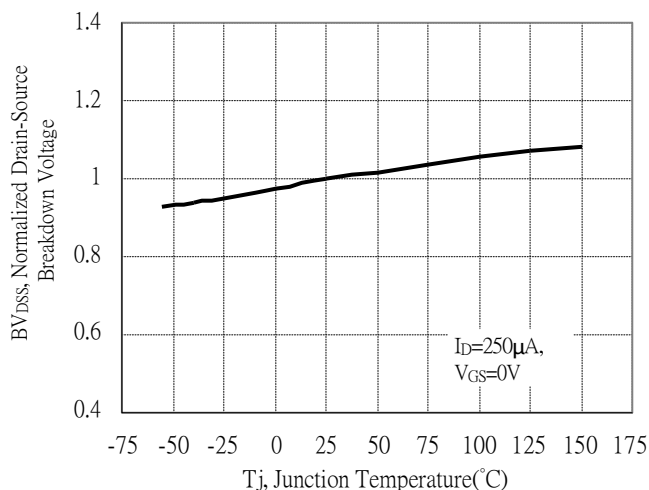
unit : mm

Typical Characteristics

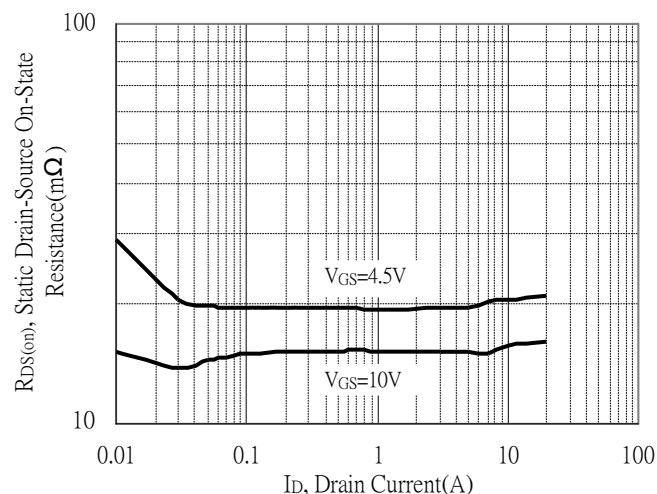
Typical Output Characteristics



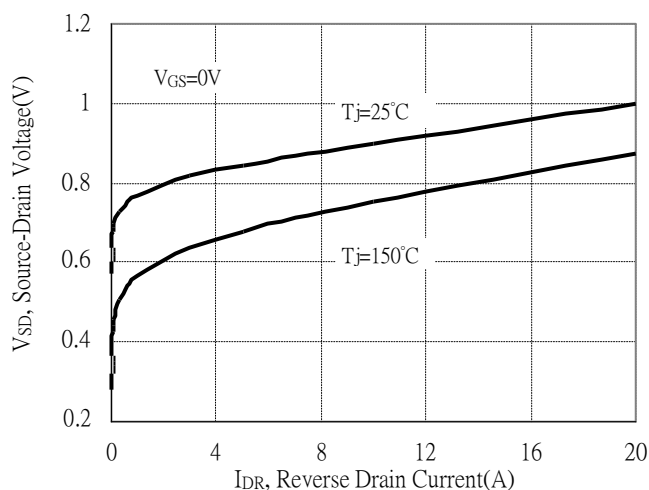
Breakdown Voltage vs Junction Temperature



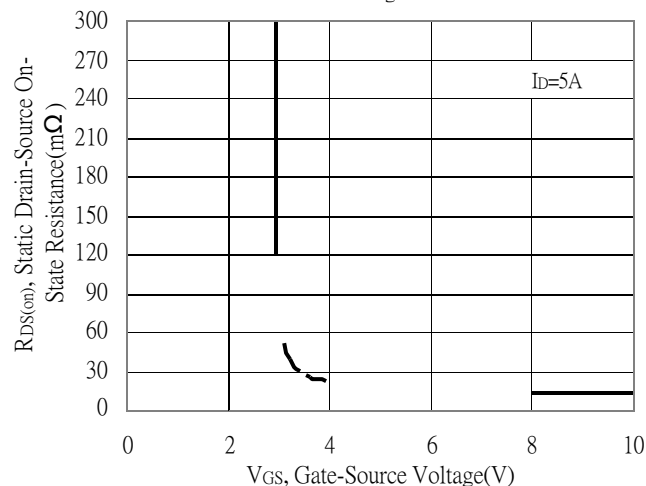
Static Drain-Source On-State resistance vs Drain Current



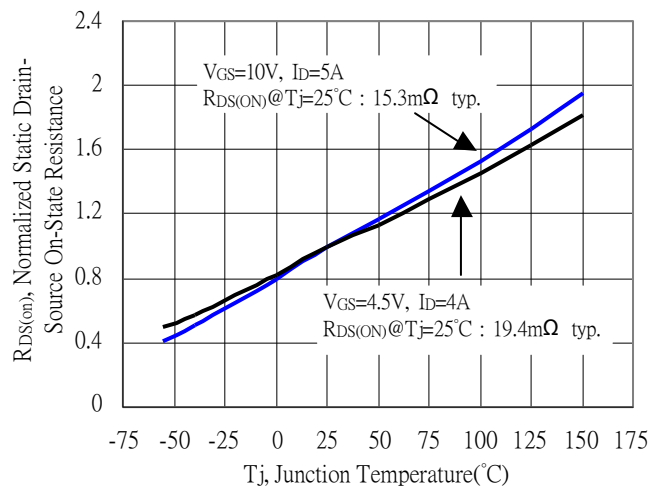
Reverse Drain Current vs Source-Drain Voltage



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

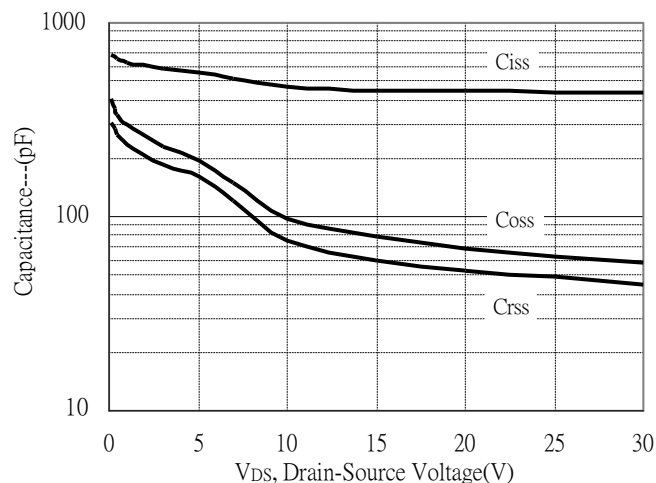


Drain-Source On-State Resistance vs Junction Temperature

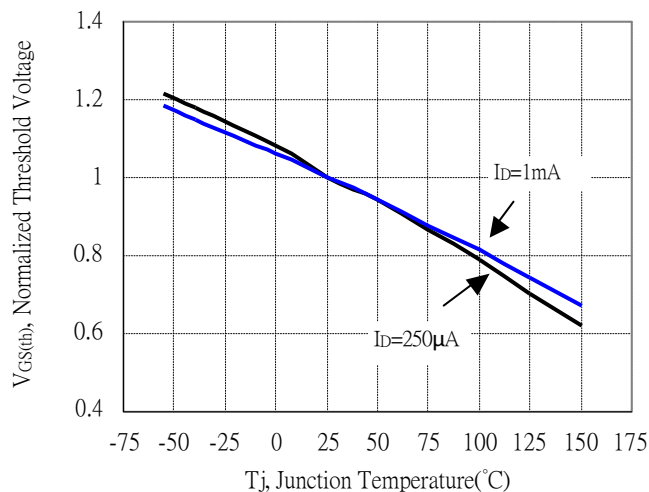


Typical Characteristics(Cont.)

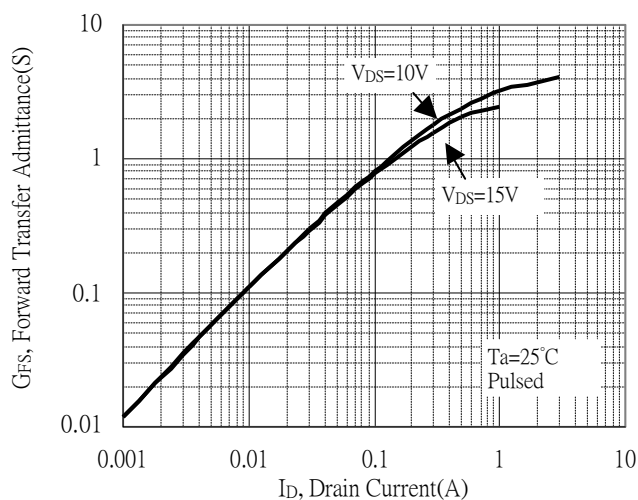
Capacitance vs Drain-to-Source Voltage



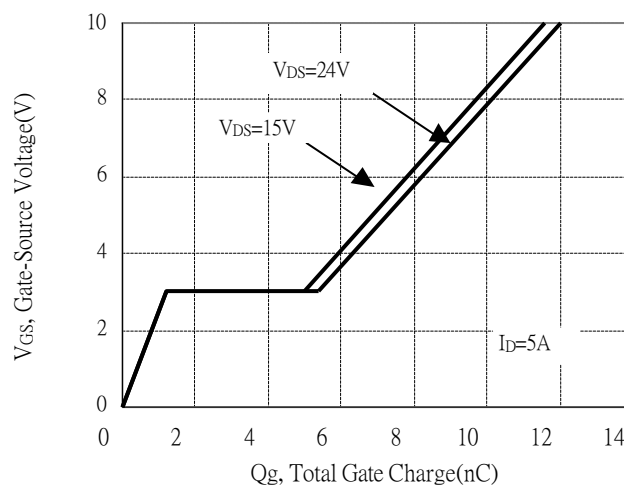
Threshold Voltage vs Junction Temperature



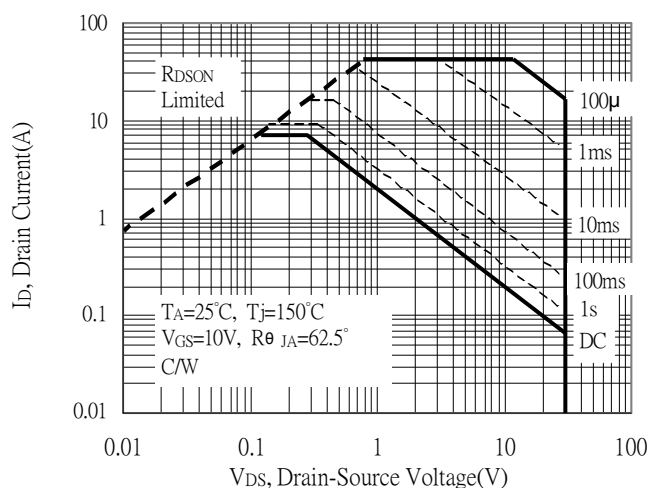
Forward Transfer Admittance vs Drain Current



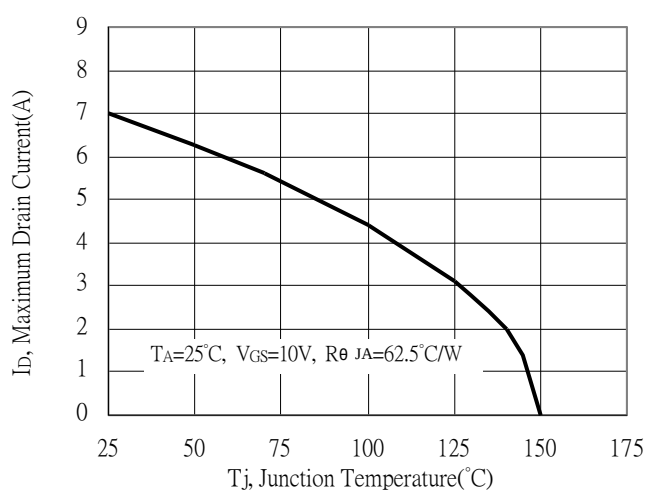
Gate Charge Characteristics



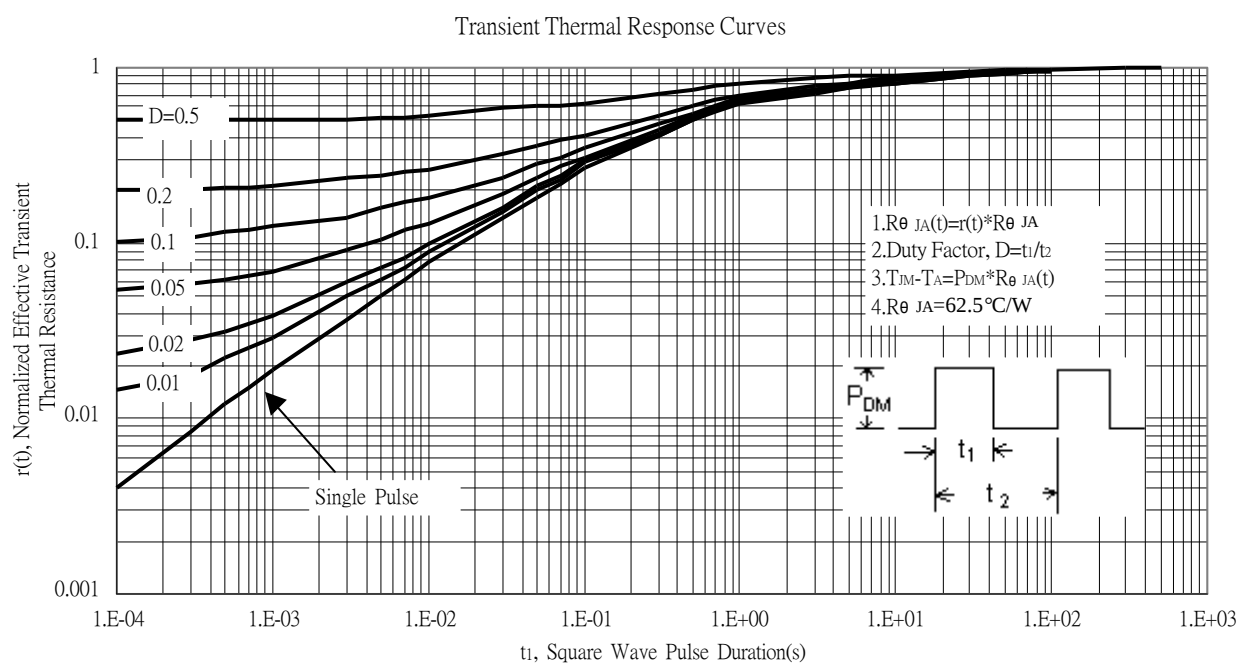
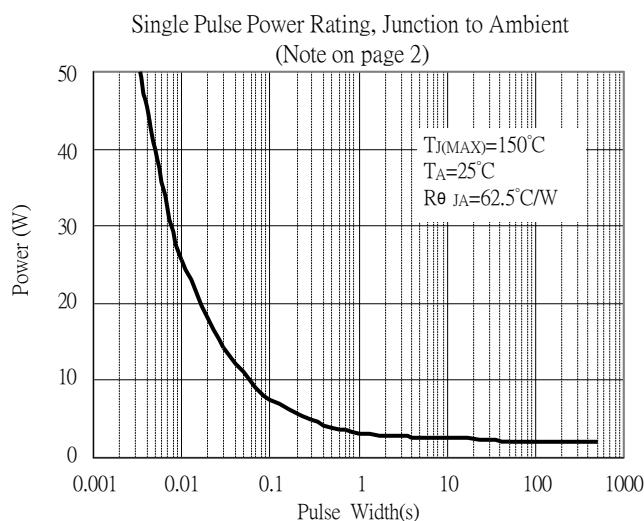
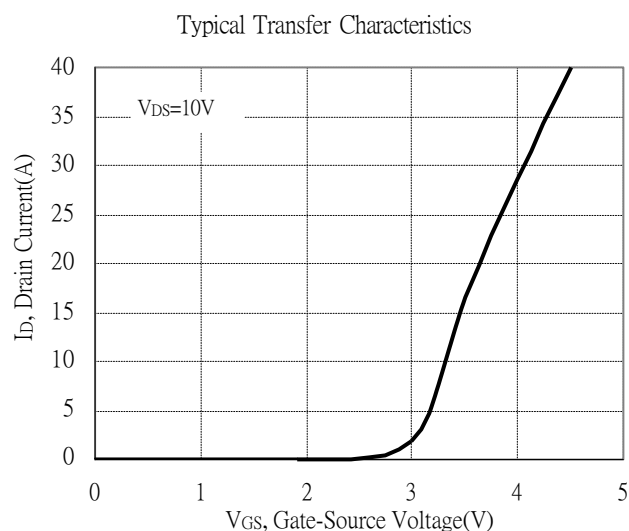
Maximum Safe Operating Area



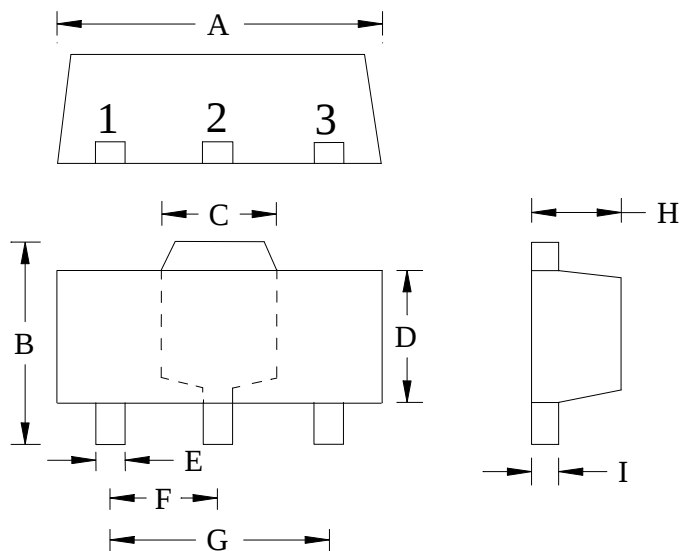
Maximum Drain Current vs Junction Temperature



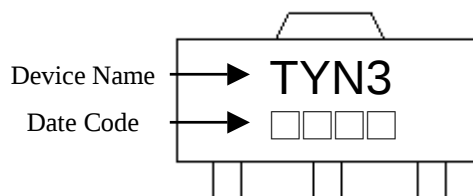
Typical Characteristics(Cont.)



SOT-89 Dimension



Marking:



Style: Pin 1. Gate 2. Drain 3. Source

3-Lead SOT-89 Plastic
 Surface Mounted Package
 Code: M3

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1732	0.1811	4.40	4.60	F	0.0591	TYP	1.50	TYP
B	0.1551	0.1673	3.94	4.25	G	0.1181	TYP	3.00	TYP
C	0.0610	REF	1.55	REF	H	0.0551	0.0630	1.40	1.60
D	0.0906	0.1024	2.30	2.60	I	0.0138	0.0173	0.35	0.44
E	0.0126	0.0205	0.32	0.52					