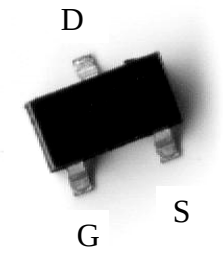
20V P-Channel Enhancement Mode MOSFET

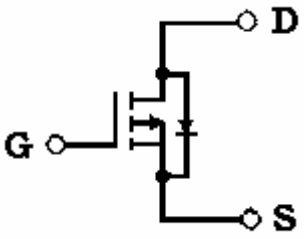
SOT-323



Features:

- Advanced trench process technology
- High density cell design for ultra low on resistance
- Excellent thermal and electrical capabilities
- Compact and low profile SOT-323 package
- Pb-free lead plating and halogen-free package

BV_{DSS}	-20V
I_D	-1.6A
$R_{DSON(MAX)}$@V_{GS}=-4.5V, I_D=-1.6A	75mΩ(typ.)
$R_{DSON(MAX)}$@V_{GS}=-2.5V, I_D=-1A	113mΩ(typ.)



G：Gate
S：Source
D：Drain

Ordering Information

Device	Package	Shipping
KWP2301S	SOT-323 (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}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current @T_A=25°C, V_{GS}=-4.5V		I_D	-1.6	A
Continuous Drain Current @T_A=70°C, V_{GS}=-4.5V			-1.3	
Pulsed Drain Current		I_{DM}	-10	
Maximum Power Dissipation	Ta=25℃	P_D	340 (Note)	mW
	Ta=70℃		218 (Note)	
Operating Junction and Storage Temperature Range		Tj ; Tstg	-55~+150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient(PCB mounted)	Rth,ja	367 (Note)	°C/W

Note : Device mounted on minimum copper pad.

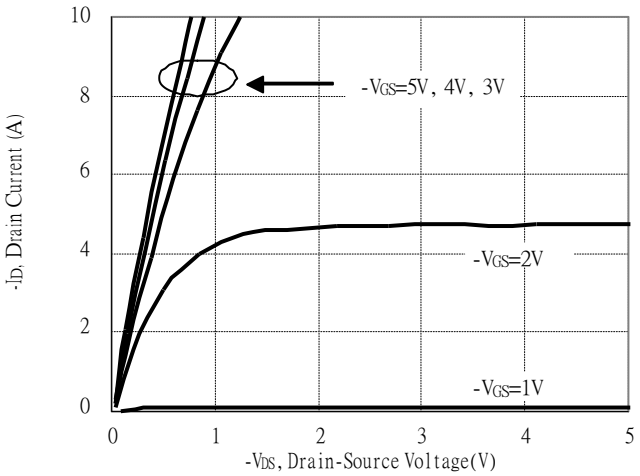
Electrical Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-20	-	-	V	V_{GS}=0, I_D=-250μA
$V_{GS(th)}$	-0.45	-	-	V	V_{DS}=V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±8V, V_{DS}=0
I_{DSS}	-	-	-1	μA	V_{DS}=-16V, V_{GS}=0
*$R_{DS(ON)}$	-	75	110	mΩ	I_D=-1.6A, V_{GS}=-4.5V
	-	113	150		I_D=-1A, V_{GS}=-2.5V
*G_{FS}	-	4.5	-	S	V_{DS}=-5V, I_D=-1.6A
Dynamic					
Ciss	-	446	-	pF	V_{DS}=-10V, V_{GS}=0, f=1MHz
Coss	-	57	-		
Crss	-	52	-		
$t_{d(ON)}$	-	9.2	20	ns	V_{DD}=-10V, I_D=-1A, V_{GS}=-4.5V, R_G=6Ω
t_r	-	7.3	60		
$t_{d(OFF)}$	-	38	50		
t_f	-	12	20		
Qg	-	4.4	-	nC	V_{DS}=-10V, I_D=-1.6A, V_{GS}=-2.5V
Qgs	-	0.5	-		
Qgd	-	1.5	-		
Source-Drain Diode					
I_S	-	-	-1.6	A	-
V_{SD}	-	-0.86	-1.2	V	V_{GS}=0V, I_S=-1.6A
trr*	-	30	-	ns	I_F=-3A, dI_F/dt=100A/μs
Qrr*	-	25	-	nC	

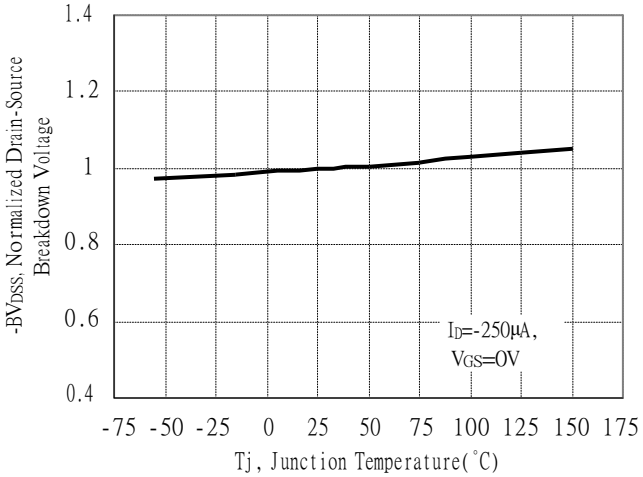
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

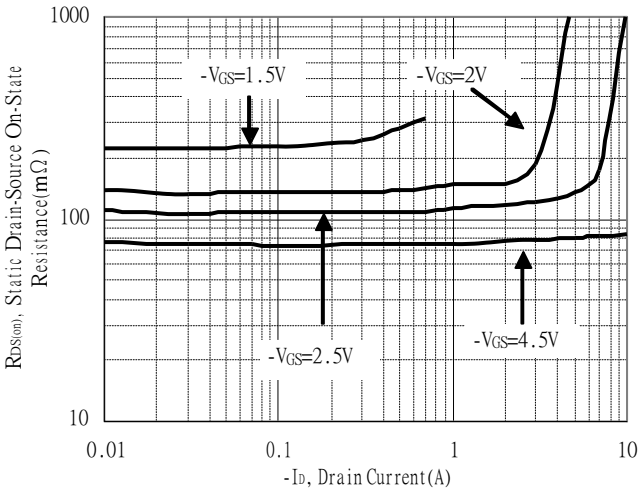
Typical Output Characteristics



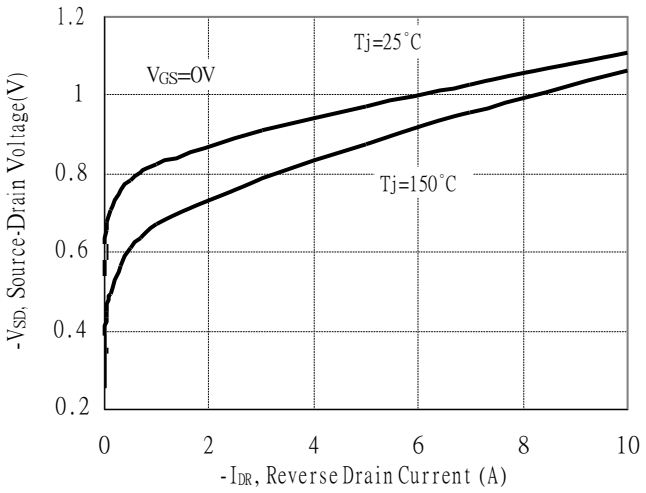
Brekdown Voltage vs Ambient Temperature



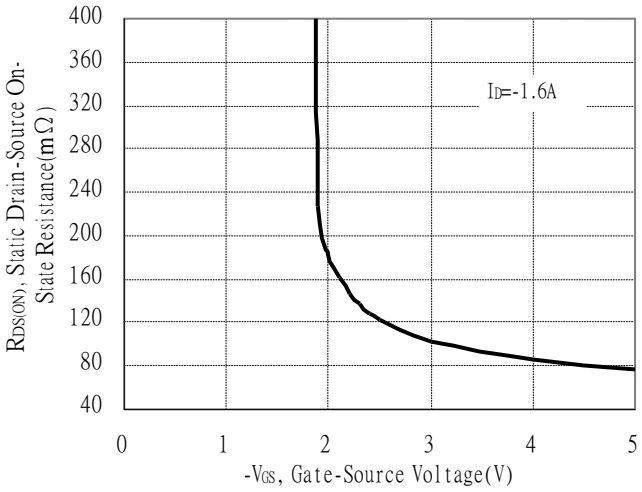
Static Drain-Source On-State resistance vs Drain Current



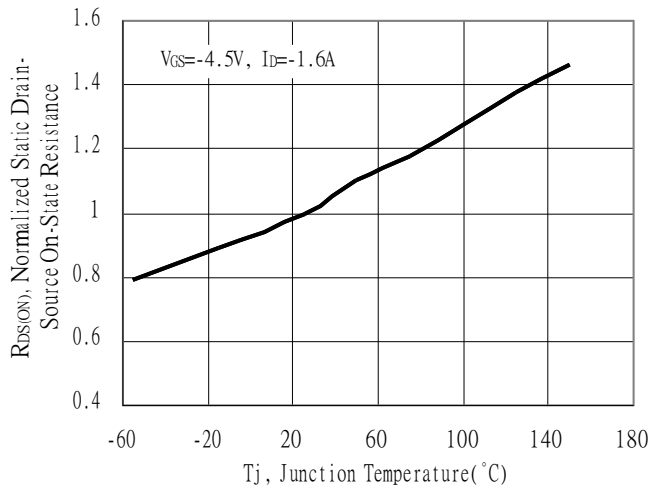
Reverse Drain Current vs Source-Drain Voltage



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

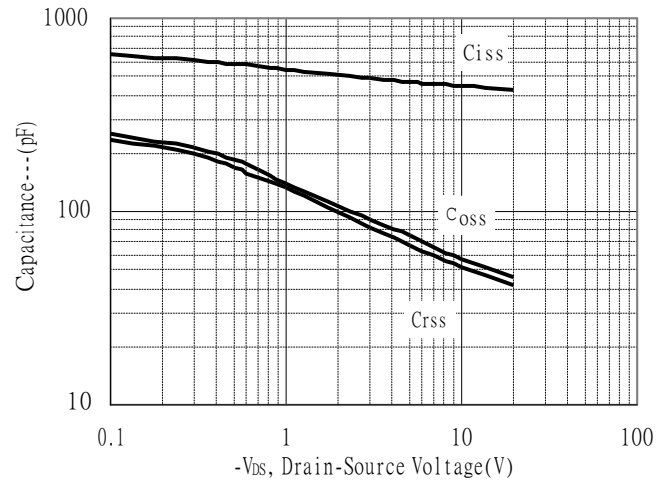


Drain-Source On-State Resistance vs Junction Tempearture

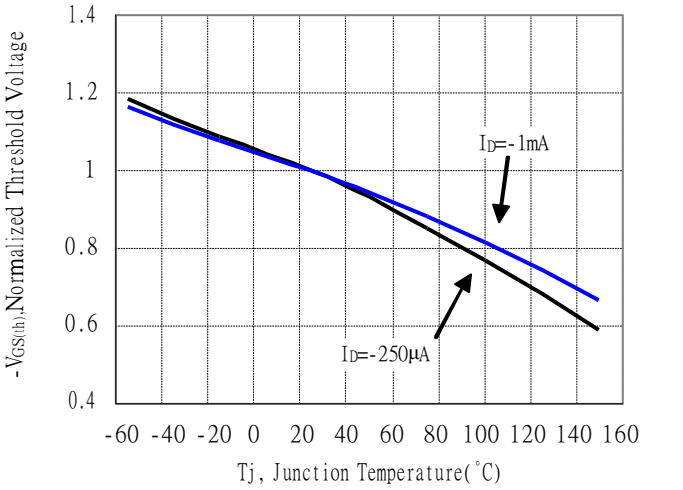


Typical Characteristics(Cont.)

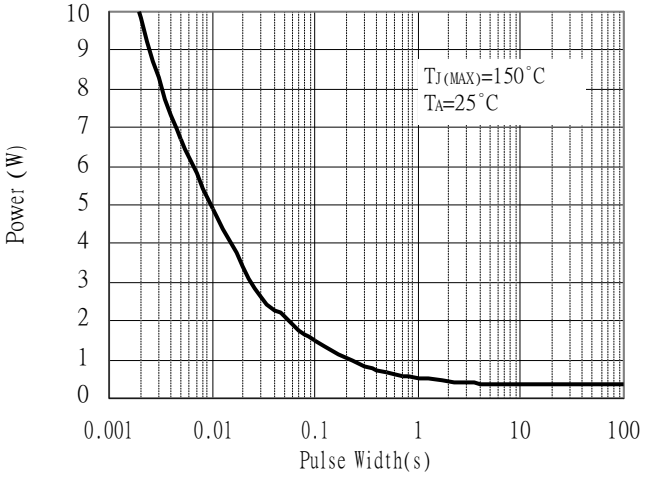
Capacitance vs Drain-to-Source Voltage



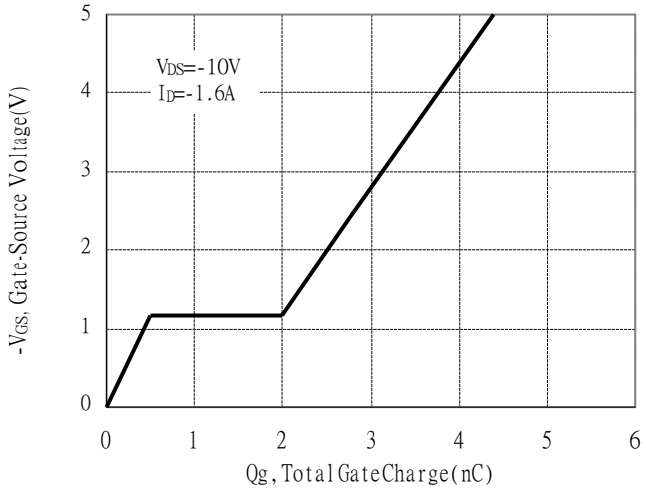
Threshold Voltage vs Junction Tempearture



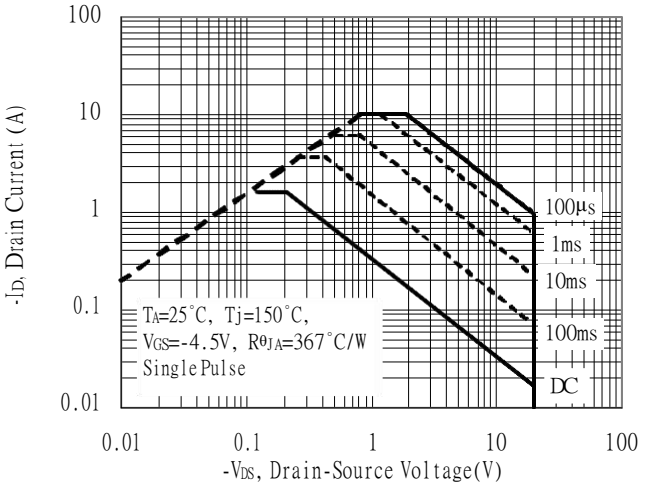
Single Pulse Power Rating, Junction to Ambient
(Note 1 on page 2)



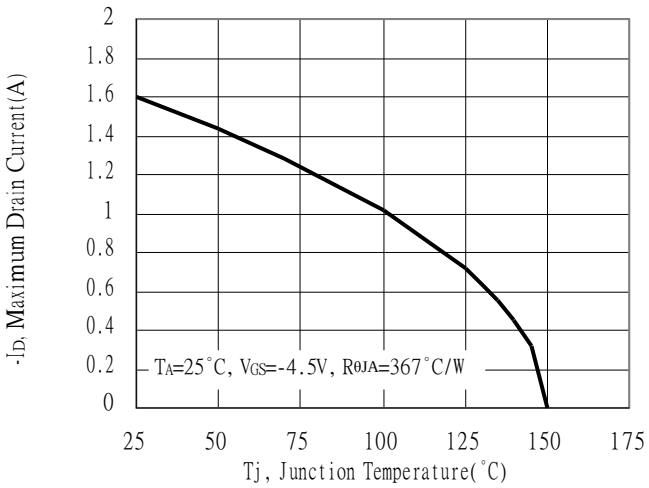
Gate Charge Characteristics



Maximum Safe Operating Area

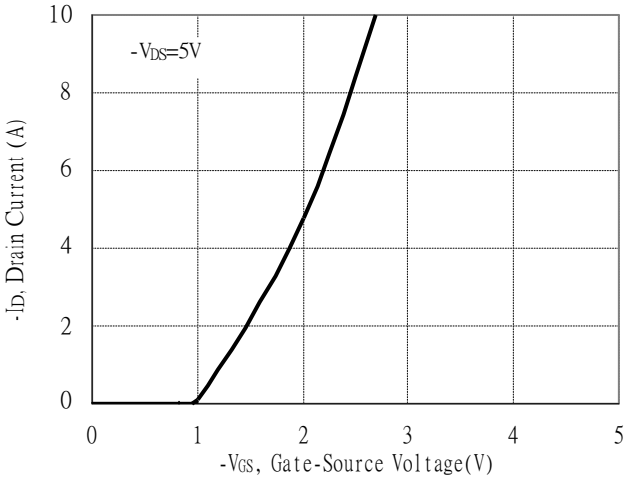


Maximum Drain Current vs JunctionTemperature

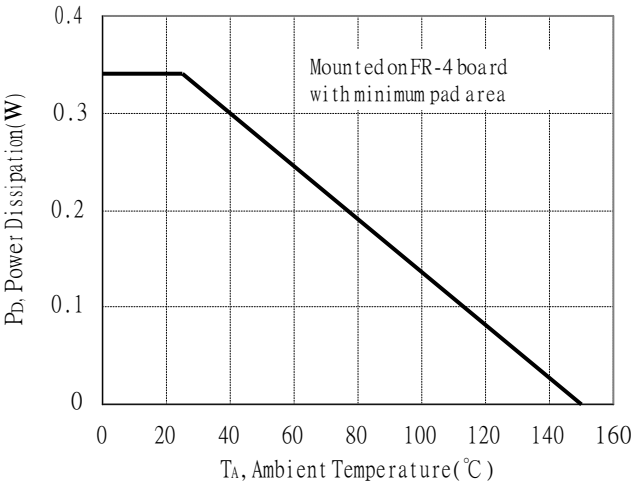


Typical Characteristics(Cont.)

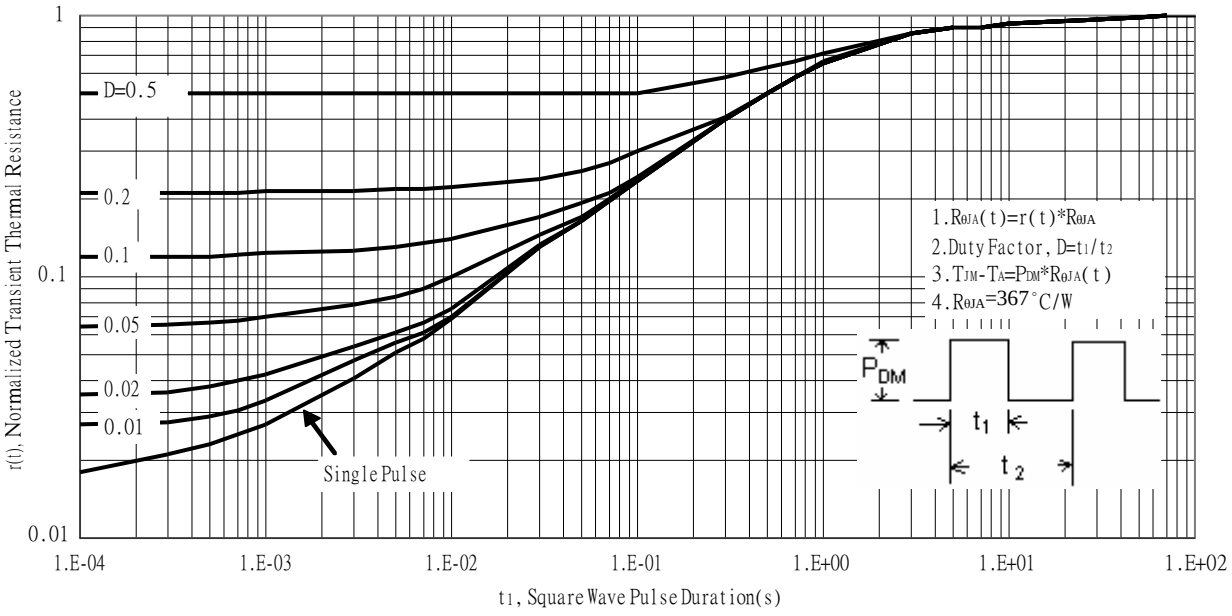
Typical Transfer Characteristics



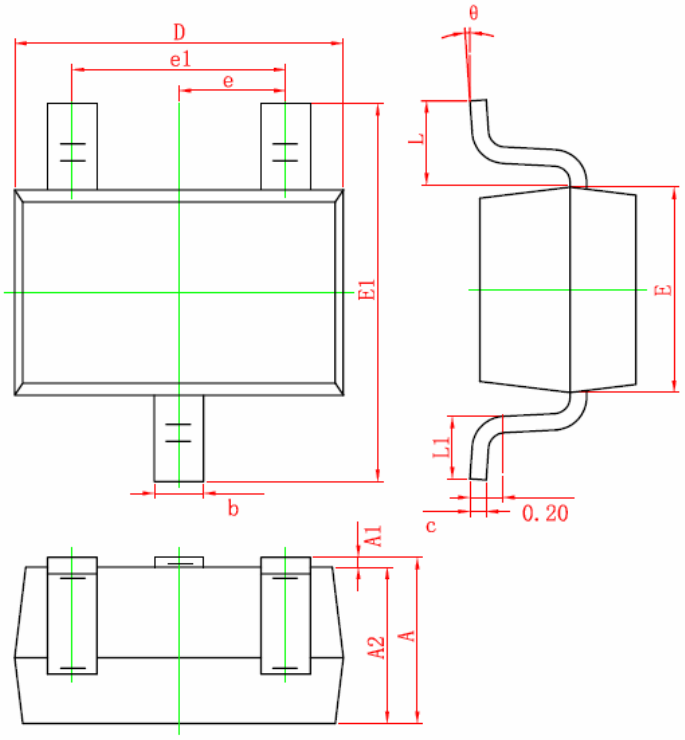
Power Derating Curve



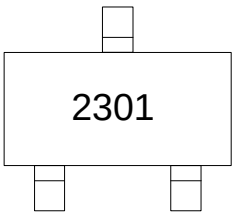
Transient Thermal Response Curves



SOT-323 Dimension



Marking:



3-Lead SOT-323 Plastic
Surface Mounted Package
Code: S3

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

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043	E1	2.150	2.450	0.085	0.096
A1	0.000	0.100	0.000	0.004	e	0.650 TYP		0.026 TYP	
A2	0.900	1.000	0.035	0.039	e1	1.200	1.400	0.047	0.055
b	0.200	0.400	0.008	0.016	L	0.525 REF		0.021 REF	
c	0.080	0.150	0.003	0.006	L1	0.260	0.460	0.010	0.018
D	2.000	2.200	0.079	0.087	θ	0°	8°	0°	8°
E	1.150	1.350	0.045	0.053					