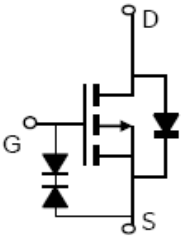
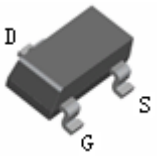
3415

P-Channel Enhancement Mode Field Effect Transistor

FEATURES

- Electrostatic Sensitive Devices.
- V_{DS} (V) = -20V
- I_D =-4 A
- $R_{DS(ON)}$ < 50mΩ (V_{GS} = -4.5V)
  $R_{DS(ON)}$ < 70mΩ (V_{GS} = -2.5V)
  $R_{DS(ON)}$ < 100mΩ (V_{GS} = -1.8V)





SOT-23

APPLICATIONS

- P-channel enhancement mode effect transistor.
- Switching application.

ORDERING INFORMATION

Type No.	Marking	Package Code
3415	3415	SOT-23

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source voltage	-20	V
V_{GSS}	Gate -Source voltage	±8	V
I_D	Continuous Drain Current[A] @ TA = 25 ℃ @ TA = 70 ℃	-4.0 -3.5	A
I_{DM}	Pulsed Drain Current [a]	-30	A
P_D	Power Dissipation @ TA = 25 ℃ @ TA = 70 ℃	1.4 0.9	W
$R_{\theta JA}$	Thermal resistance,Junction-to-Ambient	90	℃/W
T_J, Tstg	Junction and Storage Temperature	-55 to +150	℃

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P-Channel Enhancement Mode Field Effect Transistor

ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20 V_{GS}=0V	-	-	-1	μA
Gate-body Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±4.5V V_{DS}=0V, V_{GS}=±8V	-	-	±1 ±10	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.3	-0.55	-1	V
On state drain current	$I_{DON)}$	V_{DS}=-5V,V_{GS}=-4.5V	-25	-	-	A
Static drain-Source on-resistance	$R_{DS(ON)}$	V_{GS}=-4.5V,I_D=-4A V_{GS}=-2.5V,I_D=-4A V_{GS}=-1.8V,I_D=-2A	- -	40 55 85	50 70 100	mΩ
Forward Transconductance	gFS	V_{DS}=-5V,I_D=-4A	8	16	-	S
Drain-Source diode forward voltage	V_{SD}	V_{GS}=0V,I_s=-1A	-	-0.78	-1	V
Maximum Body-Diode Continuous Current	I_S		-	-	-2.2	A
DYNAMIC CHARACTERISTICS[C]						
Input capacitance	C_{ISS}	V_{DS}=-10V,V_{GS}=0V,f=1.0MHz	-	1450	-	pF
Output capacitance	C_{OSS}		-	205	-	
Reverse transfer capacitance	C_{RSS}		-	160	-	
Gate resistance	Rg	V_{DS}=0V,V_{GS}=0V,f=1.0MHz		6.5		Ω
SWITCHING CHARACTERISTICS[C]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DS} = -10V, R_L = 2.5Ω, V_{GS}= -4.5V, R_{GEN}= 3Ω	-	9.5	-	ns
Rise Time	tr		-	17	-	ns
Turn-Off Delay Time	$t_{D(OFF)}$		-	94	-	ns
Fall Time	tf		-	35	-	ns
Total Gate Charge	Qg	V_{DS} = -10V I_D= -4A V_{GS}= -4.5V,	-	17.2	-	nC
Gate-Source Charge	Qgs		-	1.3	-	nC
Gate-Drain Charge	Qgd		-	4.5	-	nC
Body Diode Reverse Recovery Time	trr	IF=-4A, dI/dt=100A/μs	-	31	-	nS
Body Diode Reverse Recovery Charge	Qrr	IF=-4A, dI/dt=100A/μs	-	13.8	-	nC

TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

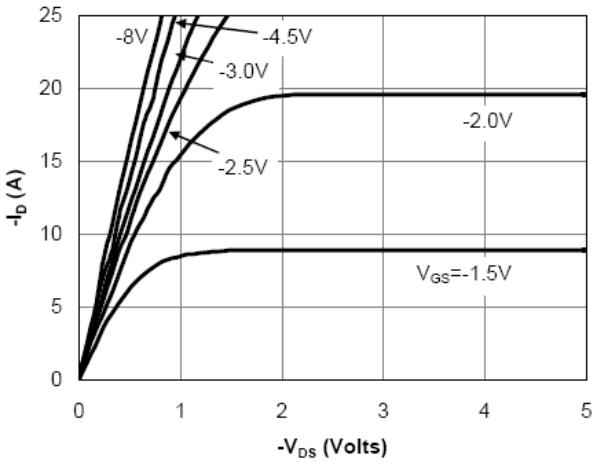

Fig 1: On-Region Characteristics

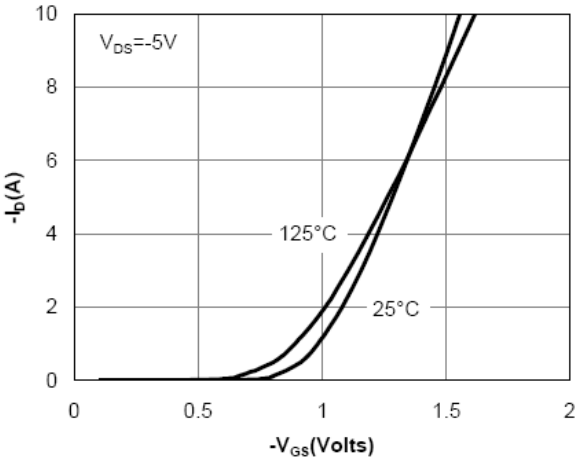

Figure 2: Transfer Characteristics

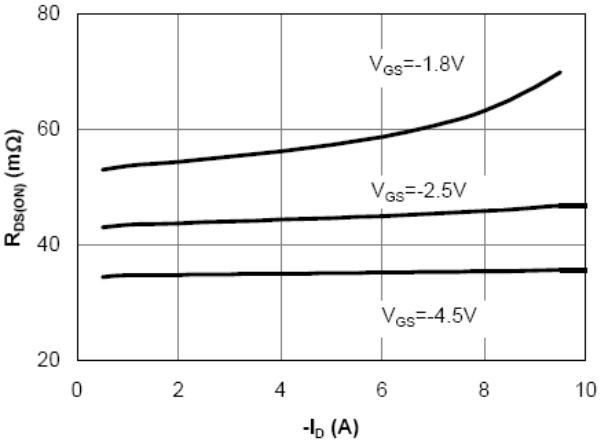

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

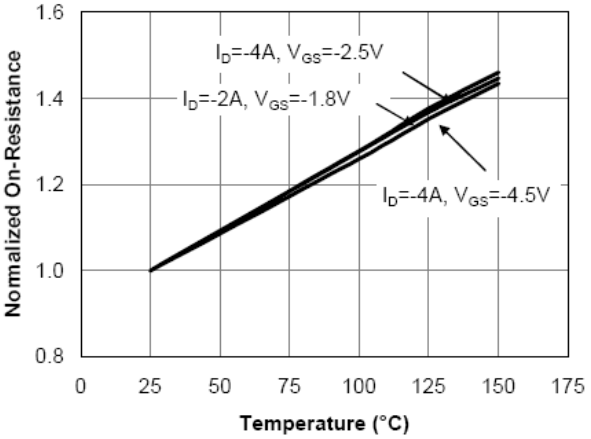

Figure 4: On-Resistance vs. Junction Temperature

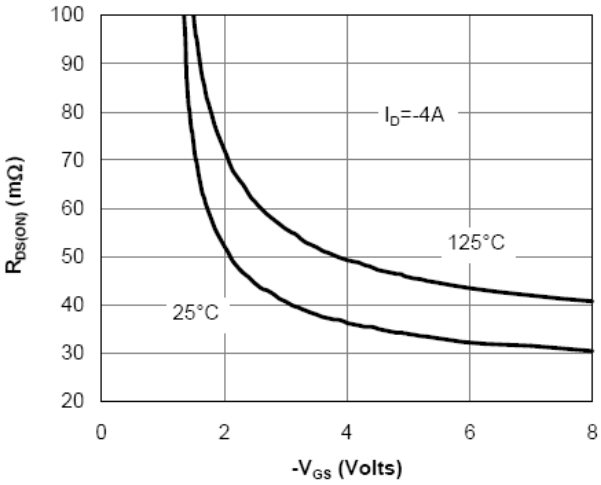

Figure 5: On-Resistance vs. Gate-Source Voltage

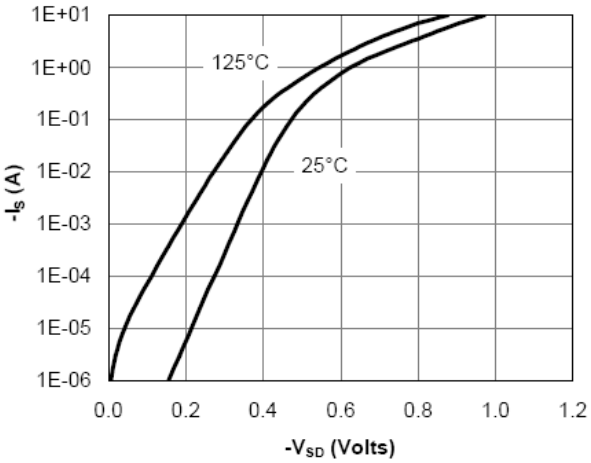

Figure 6: Body-Diode Characteristics

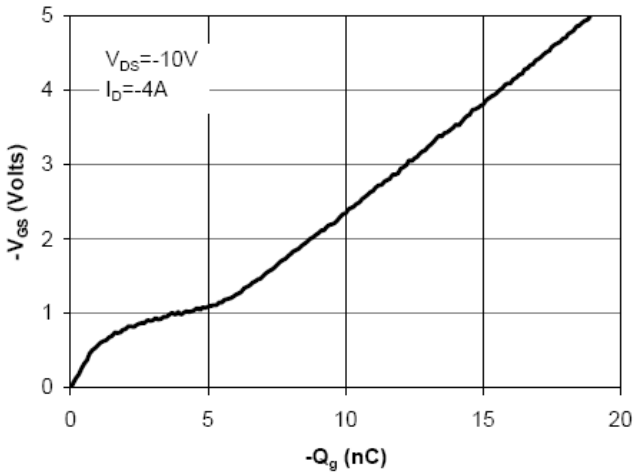

Figure 7: Gate-Charge Characteristics

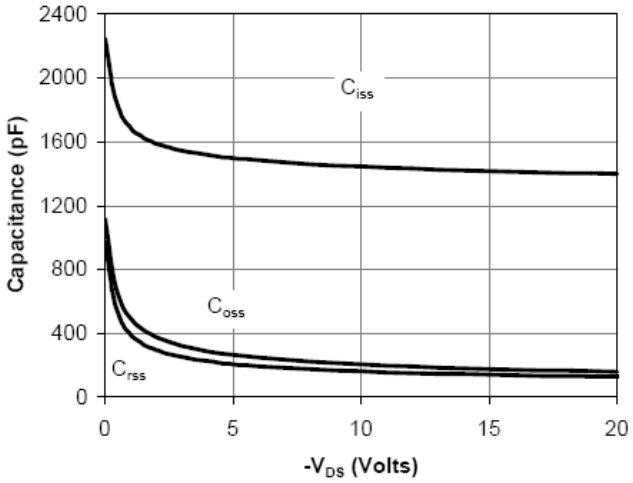

Figure 8: Capacitance Characteristics

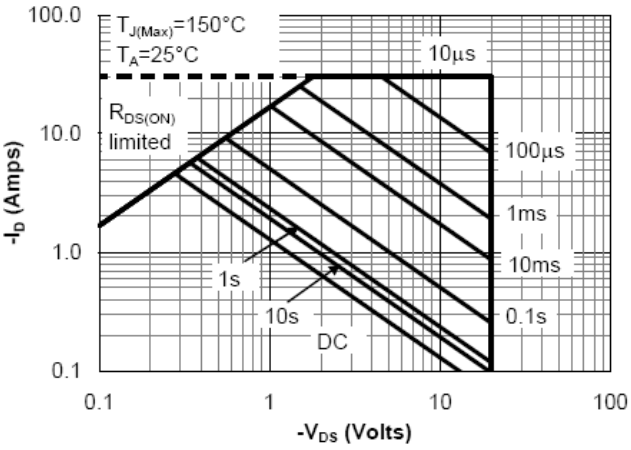

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

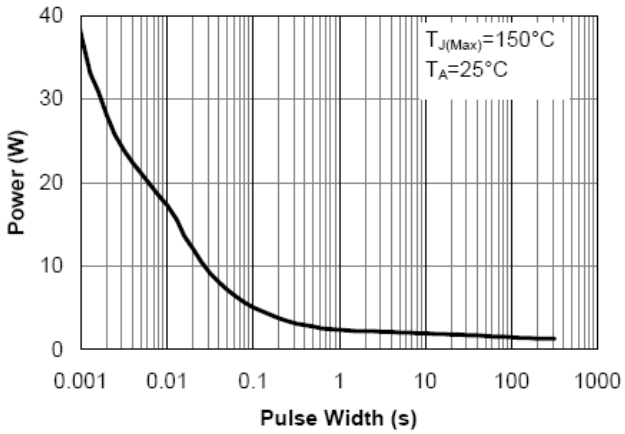

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

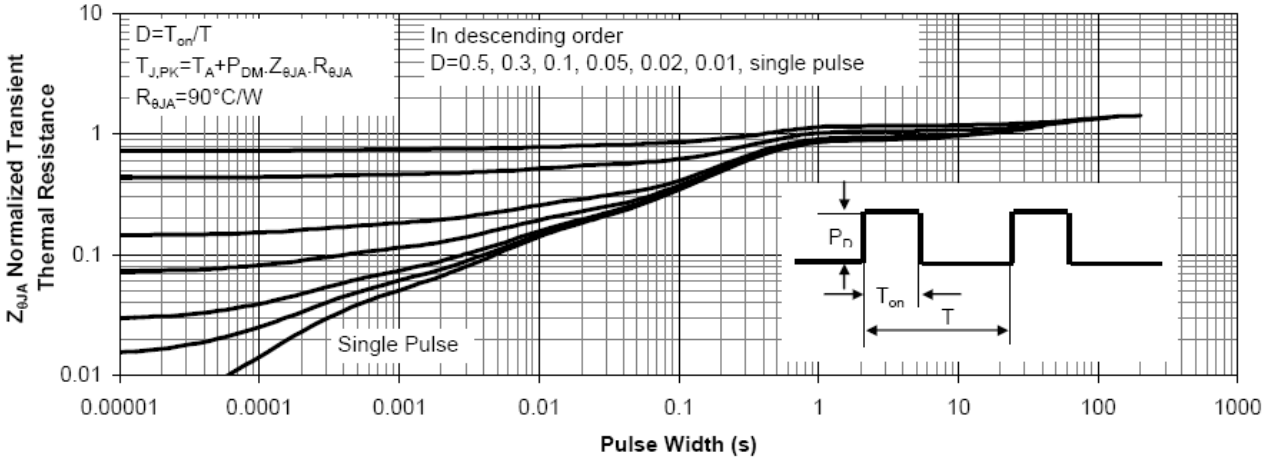

Figure 11: Normalized Maximum Transient Thermal Impedance

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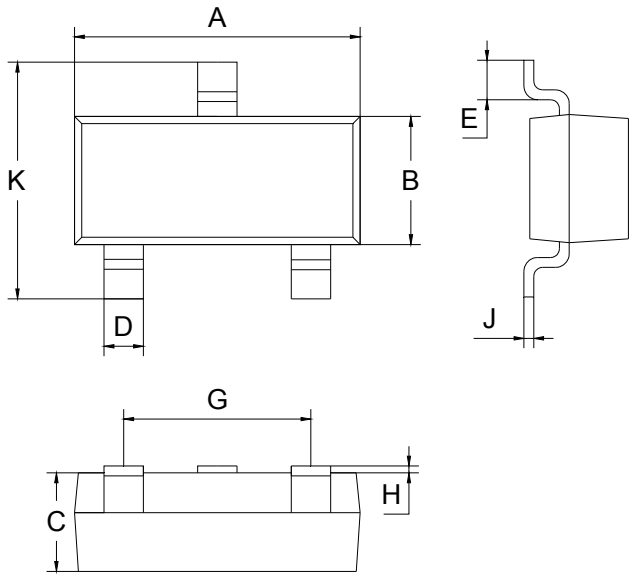
P-Channel Enhancement Mode Field Effect Transistor

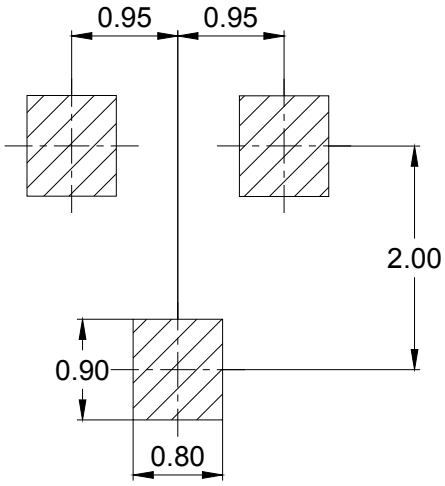
PACKAGE OUTLINE

Plastic surface mounted package SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	1.0 Typical	
D	0.4 Typical	
E	0.35	0.48
G	1.80	2.00
H	0.02	0.1
J	0.1 Typical	
K	2.20	2.60
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm

PACKAGE INFORMATION

Device	Package	Shipping
3415	SOT-23	3000/Tape&Reel