

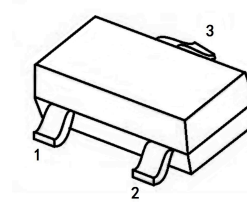
KY3415B

-20V P-Channel Mosfet

FEATURES

- $R_{DS(ON)} \leq 45m\Omega$ (38m Ω Typ.)
@ $V_{GS}=-4.5V$
- $R_{DS(ON)} \leq 60m\Omega$ (48m Ω Typ.)
@ $V_{GS}=-2.5V$
- ESD Rating: HBM 2.0KV

SOT-23

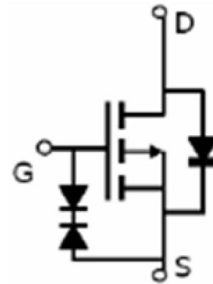


1. GATE
2. SOURCE
3. DRAIN

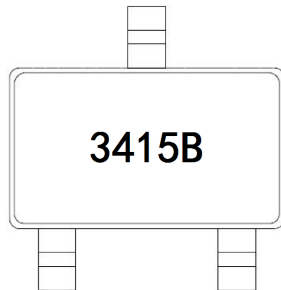
APPLICATIONS

- PWM Applications
- Load Switch
- Power Management

P-CHANNEL MOSFET



MARKING



Other marks: "3415" or "AF4E"

Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise specified)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	-20	V
V_{GSS}	Gate-Source Voltage	± 10	V
I_D	Continuous Drain Current	$T_C = 25^\circ C$	-4
		$T_C = 100^\circ C$	-2.6
I_{DM}	Pulsed Drain Current <small>note1</small>	-20	A
P_D	Power Dissipation	1.67	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	75	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$

KY3415B

Electrical Characteristics (T_c=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = -250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -20V, V _{GS} = 0V,	-	-	-1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±8V	-	-	±10	μA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-	-1.0	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note2</small>	V _{GS} =-4.5V, I _D =-4A	-	38	45	mΩ
		V _{GS} =-2.5V, I _D =-3A	-	48	60	
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D = -4A	8	-	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -10V, V _{GS} = 0V, f = 1.0MHz	-	950	-	pF
C _{oss}	Output Capacitance		-	165	-	pF
C _{rss}	Reverse Transfer Capacitance		-	120	-	pF
Q _g	Total Gate Charge	V _{DS} = -10V, I _D = -4A, V _{GS} = -4.5V	-	12	-	nC
Q _{gs}	Gate-Source Charge		-	1.4	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	3.6	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =-10V, V _{GS} =-4.5A, R _L =2.5Ω, R _{GEN} =3Ω	-	12	-	ns
t _r	Turn-on Rise Time		-	10	-	ns
t _{d(off)}	Turn-off Delay Time		-	19	-	ns
t _f	Turn-off Fall Time		-	25	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-4	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-20	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = -4A	-	-	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycles≤2%

Typical Performance Characteristics

Figure 1: Output Characteristics

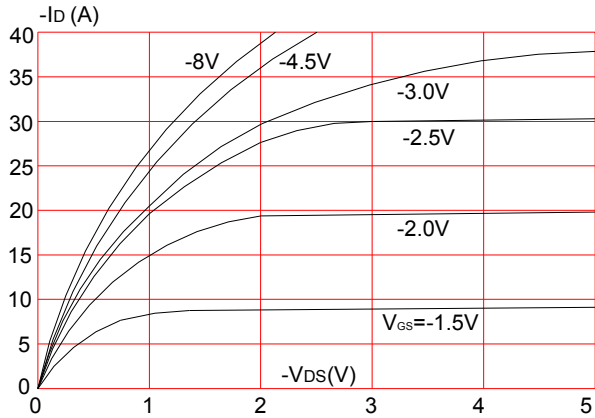


Figure 2: Typical Transfer Characteristics

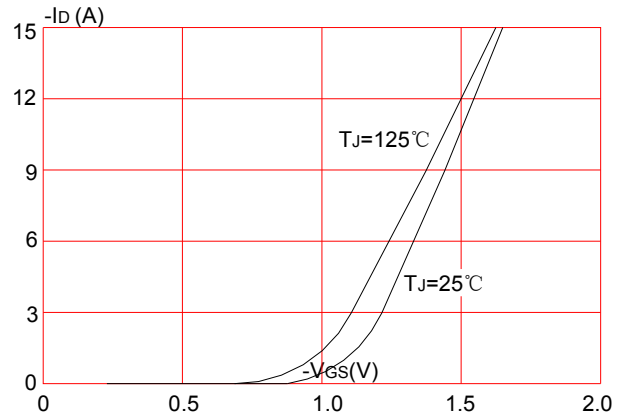


Figure 3: On-resistance vs. Drain Current

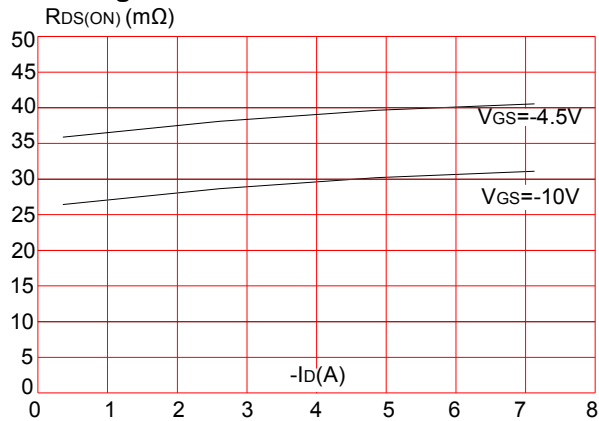


Figure 4: Body Diode Characteristics

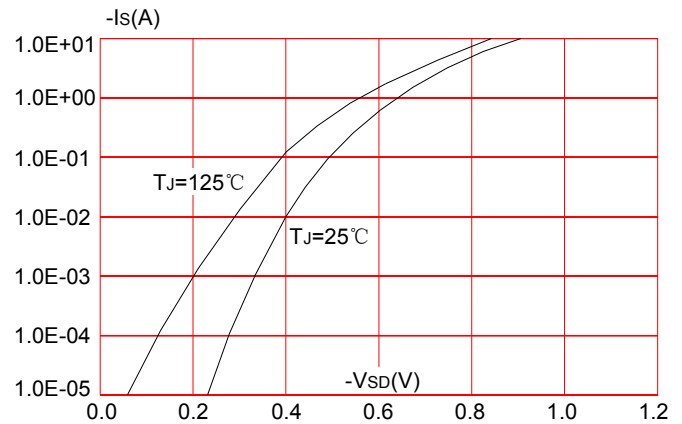


Figure 5: Gate Charge Characteristics

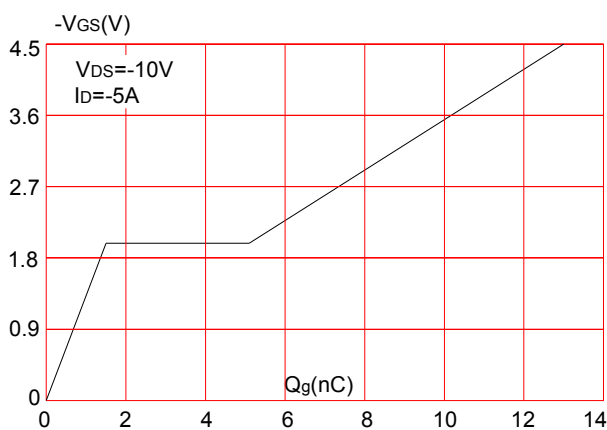
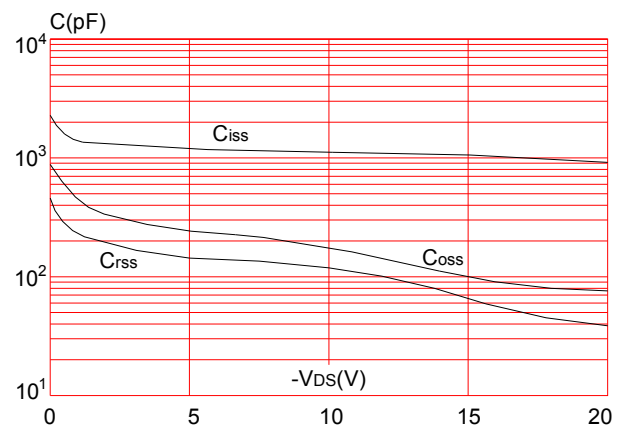


Figure 6: Capacitance Characteristics



Typical Performance Characteristics (cont.)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

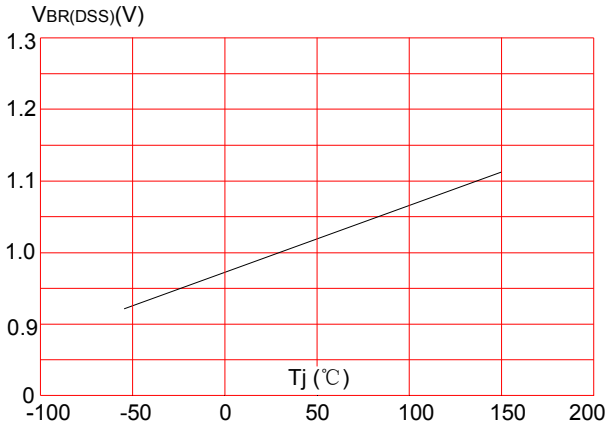


Figure 8: Normalized on Resistance vs. Junction Temperature

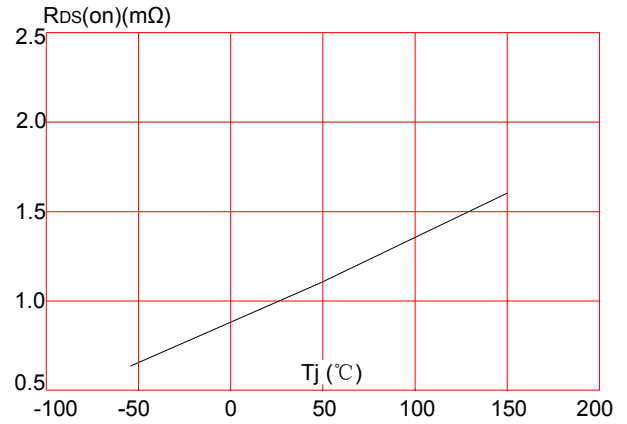


Figure 9: Maximum Safe Operating Area

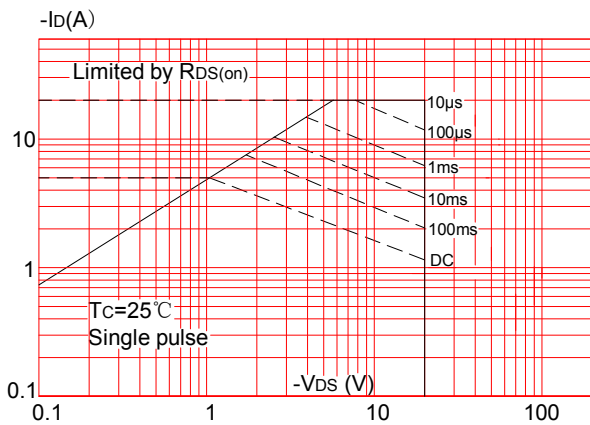


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

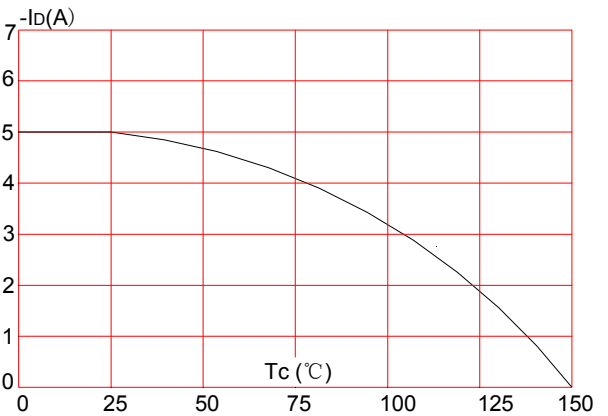
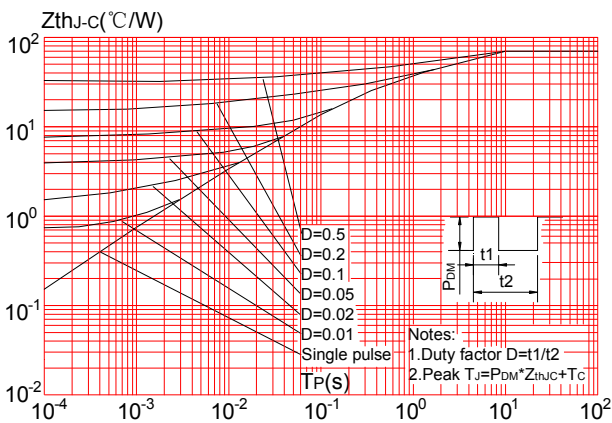
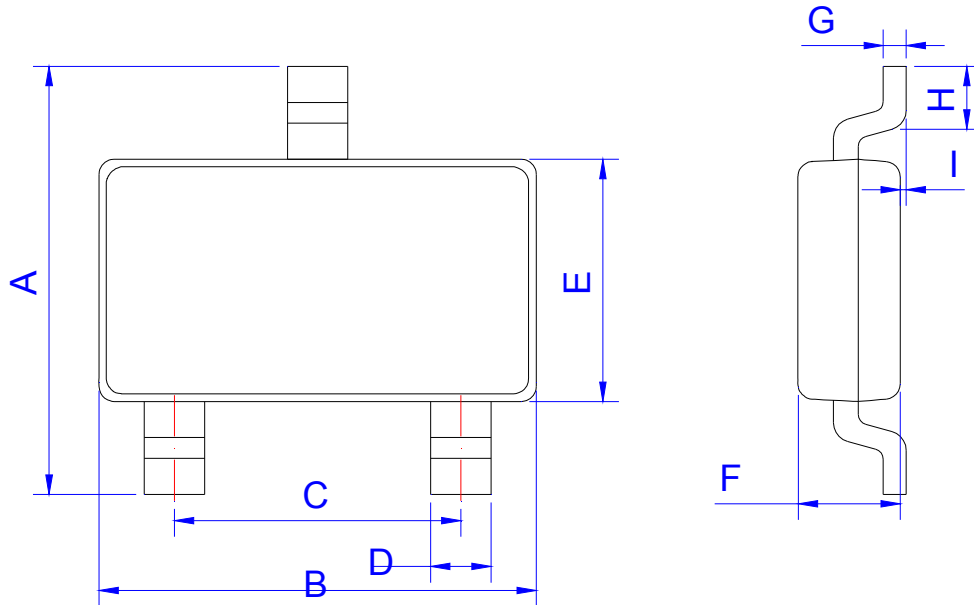


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient (SOT-23)



KY3415B

SOT-23 PACKAGE OUTLINE DRAWING



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.30	2.40	2.50	0.091	0.095	0.098
B	2.80	2.90	3.00	0.110	0.114	0.118
C	1.90 REF			0.075 REF		
D	0.35	0.40	0.45	0.014	0.016	0.018
E	1.20	1.30	1.40	0.047	0.051	0.055
F	0.90	1.00	1.10	0.035	0.039	0.043
G		0.10	0.15		0.004	0.006
H	0.20			0.008		
I	0		0.10	0		0.004

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