

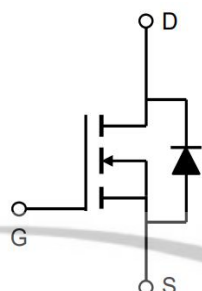
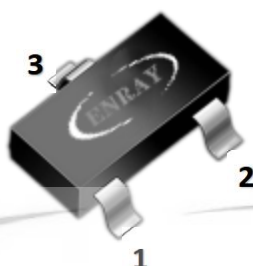
**ER3420****20V N-Channel MOSFET****Features**

The ER3420 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

Product Summary

V_{DS}	20V
I_D	6A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	< 24m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	< 27m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	< 42m Ω

1.GATE
2.SOURCE
3.DRAIN

**Order Information**

Product	Package	Marking	Packing
ER3420	SOT-23	ANOK	3000PCS/Reel

Maximum Ratings($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain Current	I_D	6	A
Pulsed Drain Current ①	I_{DM}	30	
Continuous Source-Drain Current(Diode Conduction)	I_S	2	
Power Dissipation ②	P_D	1.4	W
Thermal Resistance from Junction to Ambient ($t \leq 5s$)	$R_{\theta JA}$	125	$^{\circ}\text{C/W}$
Operating Junction	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}\text{C}$

Electrical Characteristics(TJ=25°C unless otherwise noted)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters ③						
Drain-Source Breakdown Voltage	BVDSS	VGS = 0V, ID = 250μA	20			V
Gate Threshold Voltage	VGS(th)	VDS =VGS, ID = 250μA	0.4		1.1	V
Gate-Body leakage Current	IGSS	VDS =0V, VGS = ±12V			±100	nA
Zero Gate Voltage Drain Current	IDSS	VDS = 30V, VGS =0V			1	μA
Static Drain-Source On-Resistance	RDS(on)	VGS = 10V, ID = 6A		18	24	mΩ
		VGS = 4.5V, ID = 5A		20	27	mΩ
		VGS = 2.5V, ID = 4A		25	42	mΩ
Forward Transconductance	gFs	VDS = 4.5V, ID = 6A		25		S
Diode Forward Voltage	VSD	IS=1A,VGS=0V		0.72	1.1	V
Dynamic Parameters ④						
Total Gate Charge	Qg	VDS = 10V,VGS = 10V, ID =6A		12.5	12	nC
Gate Source Charge	Qgs			1.1		nC
Gate Drain Charge	Qgd			2		nC
Input Capacitance	Ciss	VDS = 10V,VGS =0V, f=1MHz		525		pF
Output Capacitance	Coss			95		pF
Reverse Transfer Capacitance	Crss			75		pF
Gate Resistance	Rg	f=1MHz		1.7		Ω
Switching Parameters ④						
Turn-On DelayTime	td(on)	VDD= 10V RL=1.7Ω, ID = 3A, VGEN= 10V,Rg=3Ω		3		ns
Turn-On Rise Time	tr			7.5		ns
Turn-Off DelayTime	td(off)			20		ns
Turn-Off Fall Time	tf			6		ns
Note :						
1. Repetitive Rating : Pulse width limited by maximum junction temperature.						
2. Surface Mounted on FR4 Board, t < 5 sec.						
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.						
4. Guaranteed by design, not subject to production testing.						

Typical Electrical and Thermal Characteristics

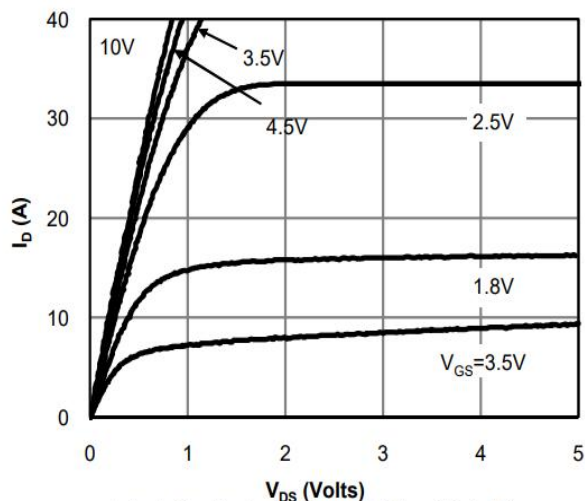


Fig 1: On-Region Characteristics (Note E)

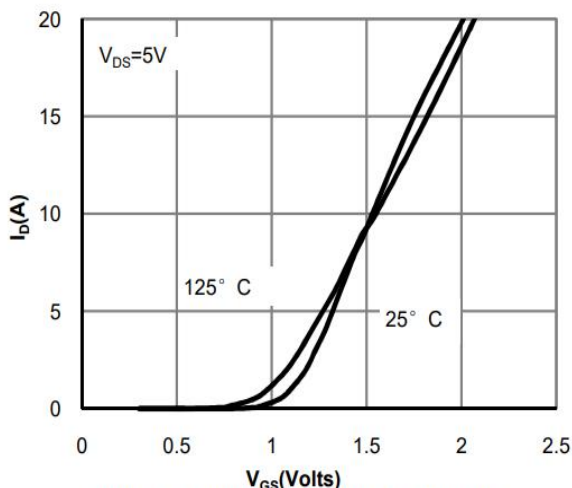


Figure 2: Transfer Characteristics (Note E)

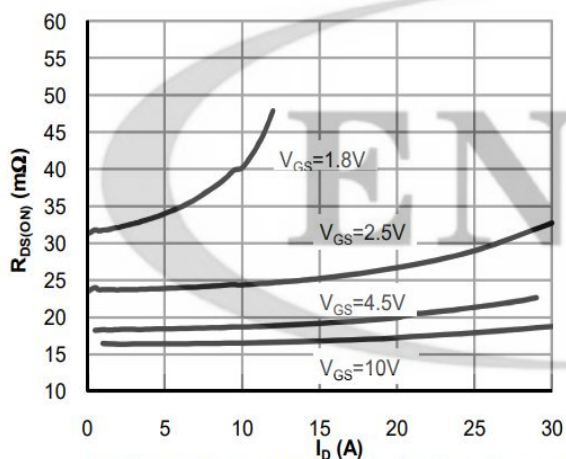


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

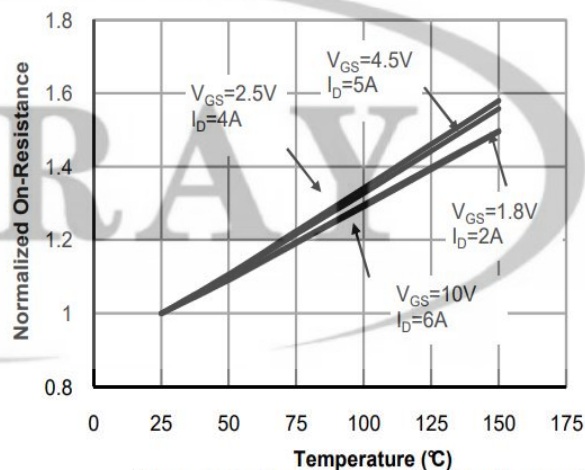


Figure 4: On-Resistance vs. Junction Temperature (Note E)

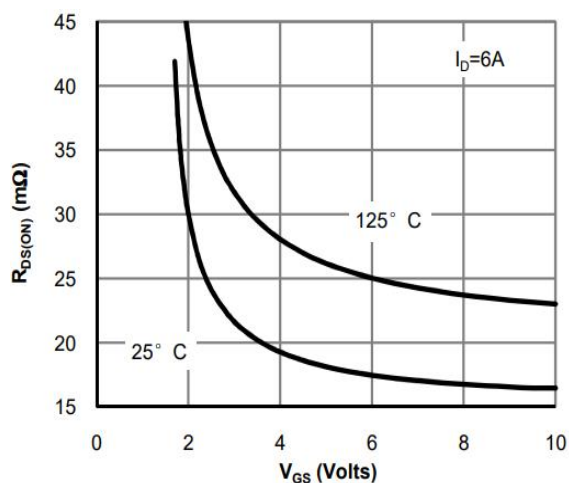


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

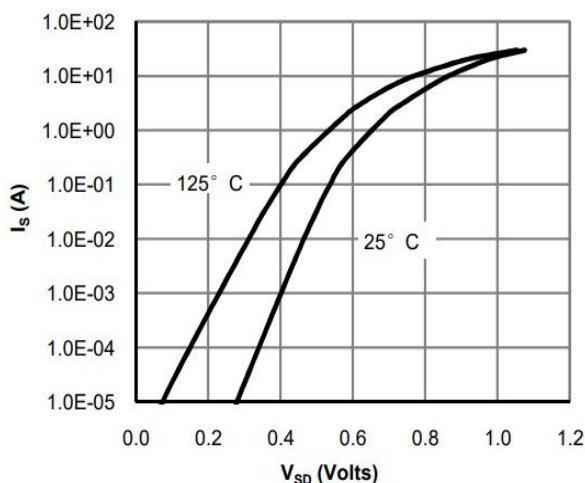


Figure 6: Body-Diode Characteristics (Note E)

Typical Electrical and Thermal Characteristics

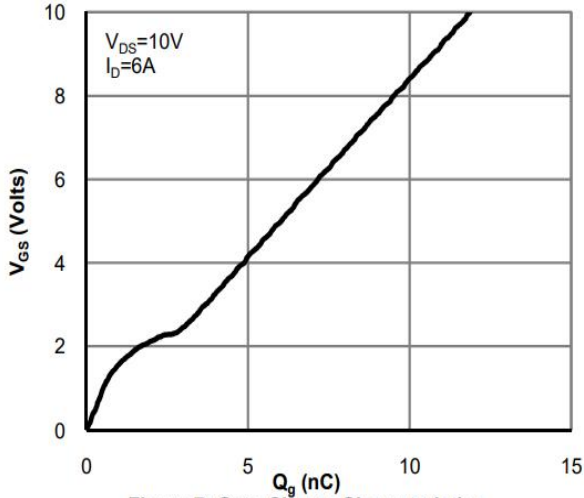


Figure 7: Gate-Charge Characteristics

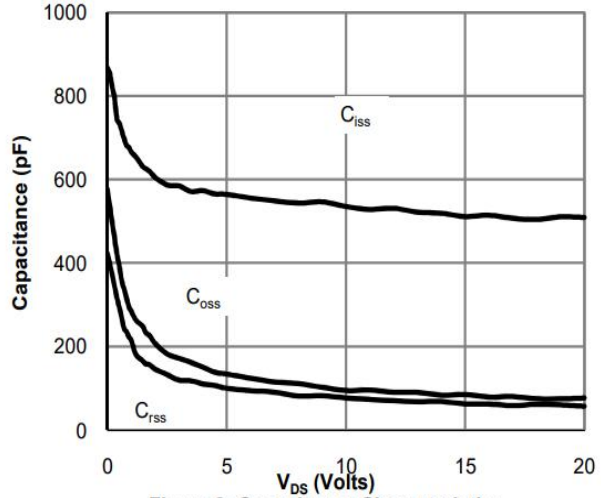


Figure 8: Capacitance Characteristics

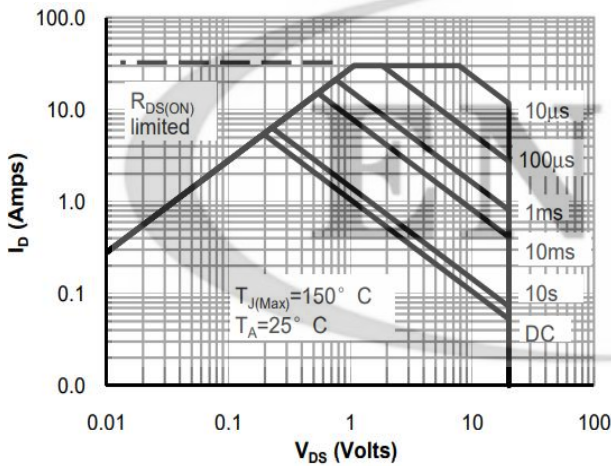


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

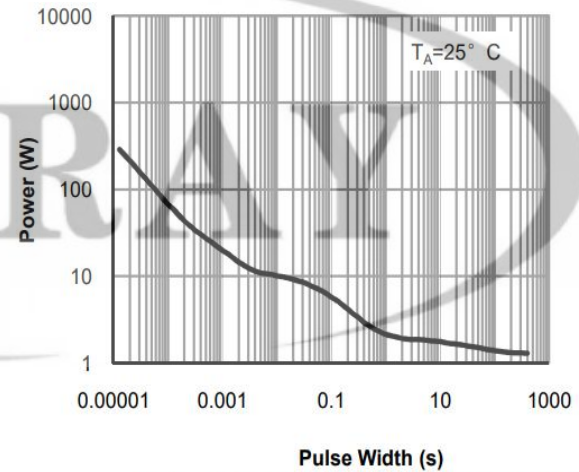


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

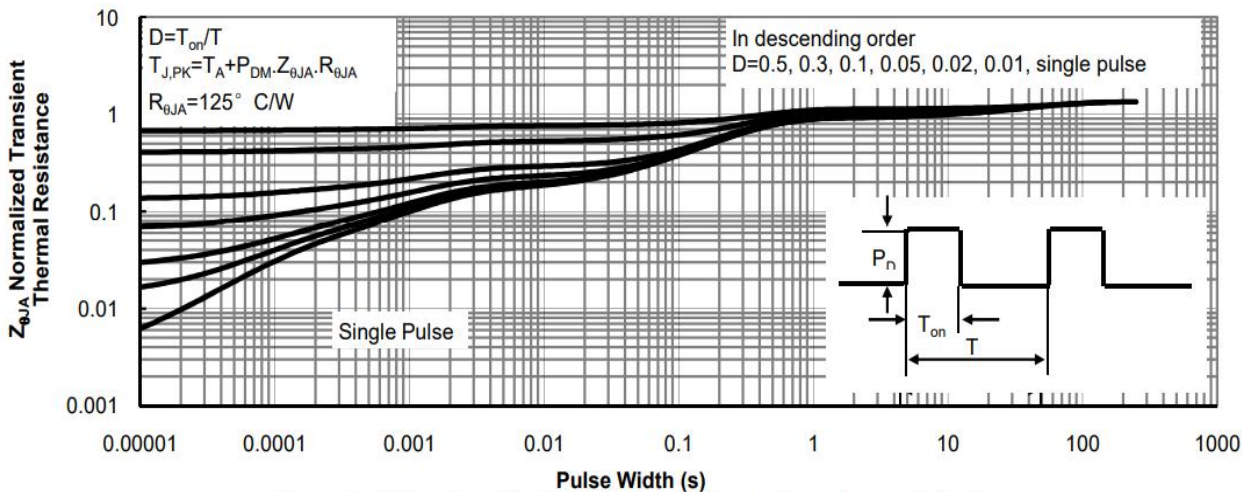
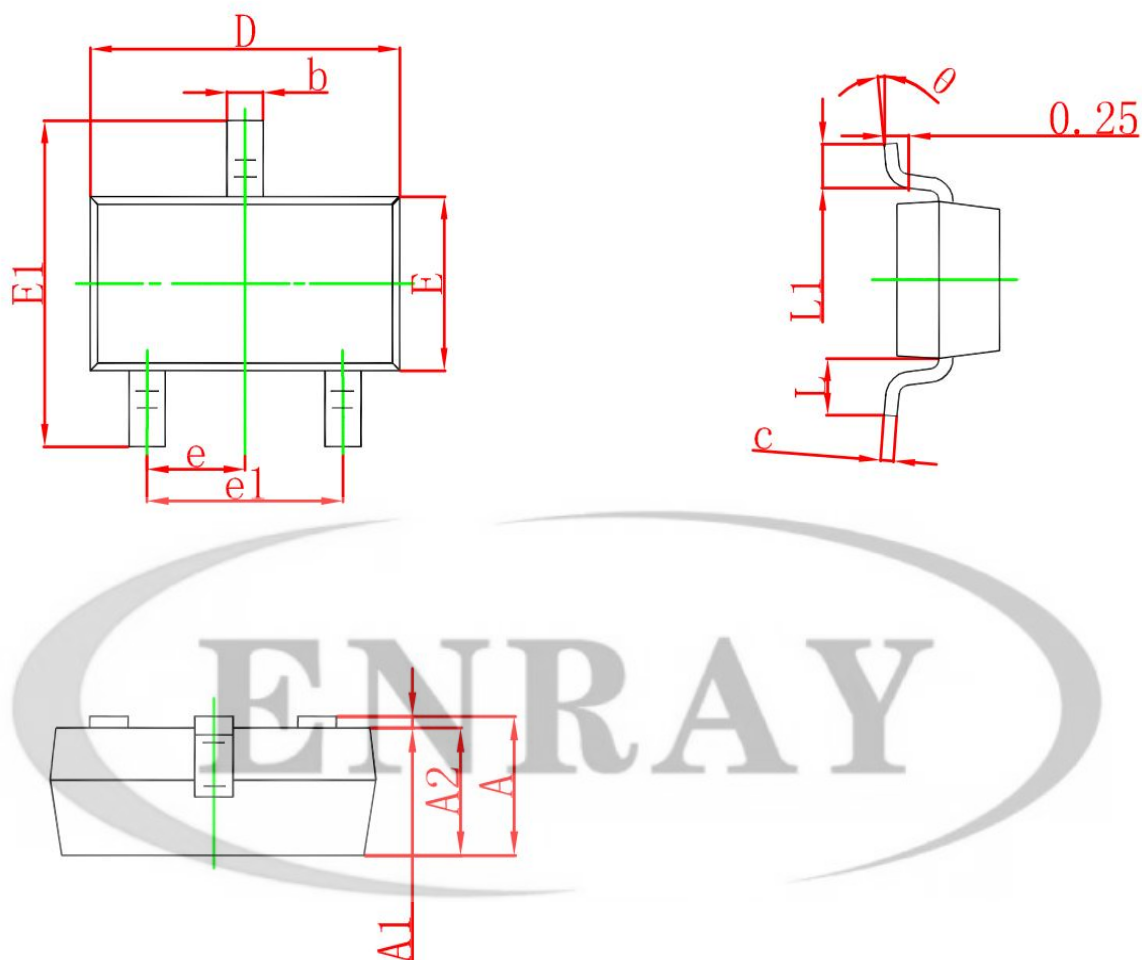


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

SOT-23 Package Outline Dimesions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°