ER3422

60V N-Channel MOSFET

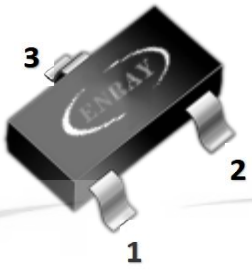
Features

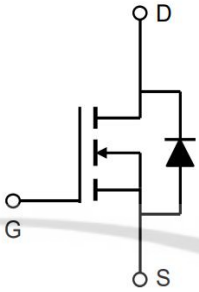
The E R 3422 uses advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

Product Summary

V_{DS}	60V
I_D	3A
$R_{DS(ON)}$ (at V_{GS}=10V)	< 95mΩ
$R_{DS(ON)}$ (at V_{GS} =4.5V)	< 100mΩ

1.GATE
2.SOURCE
3.DRAIN





Order Information

Product	Package	Marking	Packing
ER3422	SOT-23	S10	3000PCS/Reel

Maximum Ratings(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	3	A
Pulsed Drain Current ①	I_{DM}	10	
Continuous Source-Drain Current(Diode Conduction)	I_S	0.8	
Power Dissipation ②	P_D	1.25	W
Thermal Resistance from Junction to Ambient (t≤5s)	$R_{\theta JA}$	357	℃/W
Operating Junction	T_J	150	℃
Storage Temperature	T_{STG}	-55~+150	℃

Electrical Characteristics(TJ=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters ③						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS = 0V, ID = 250μA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	VDS =VGS, ID = 250μA	0.9		2	V
Gate-Body leakage Current	I_{GSS}	VDS =0V, VGS = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	VDS = 60V, VGS =0V			1	μA
Static Drain-Source On-Resistance	RDS(on)	VGS = 10V, ID = 3 A		72	95	mΩ
		VGS = 4.5V, ID = 2 A		82	100	mΩ
Forward Transconductance	gFs	VDS = 4.5V, ID = 3A		7		S
Diode Forward Voltage	V_{SD}	IS=1A,VGS=0V		0.8	1.2	V
Dynamic Parameters ④						
Input Capacitance	C_{iss}	VDS = 10V,VGS =0V, f=1MHz		247		pF
Output Capacitance	C_{oss}			34		pF
Reverse Transfer Capacitance	C_{rss}			20		pF
Total Gate Charge	Q_g	VDS = 10V,VGS = 4.5V, ID = 3A		6	4.5	nC
Gate Source Charge	Q_{gs}			1		nC
Gate Drain Charge	Q_{gd}			1.3		nC
Gate Resistance	R_g	f=1MHz		5		Ω
Switching Parameters ④						
Turn-On DelayTime	td(on)	VDD= 10V RL=10Ω, ID ≈ 1A, VGEN= 4.5V,Rg=6Ω		7	15	ns
Turn-On Rise Time	tr			15	20	ns
Turn-Off DelayTime	td(off)			15	25	ns
Turn-Off Fall Time	tf			10	20	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

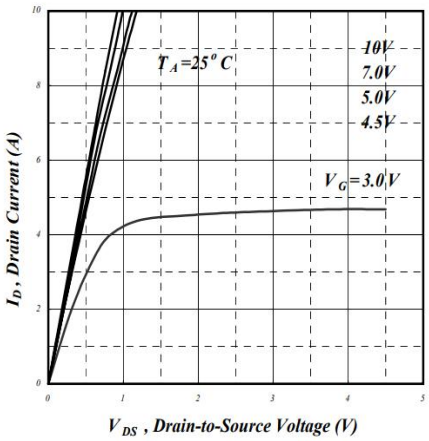


Fig 1. Typical Output Characteristics

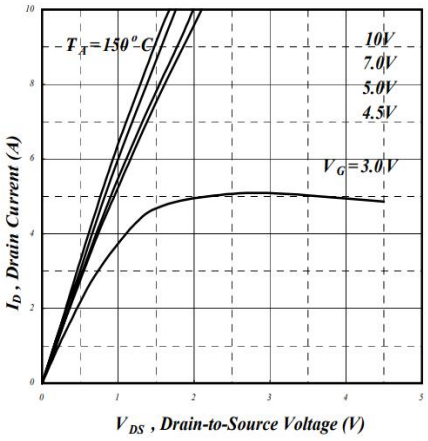


Fig 2. Typical Output Characteristics

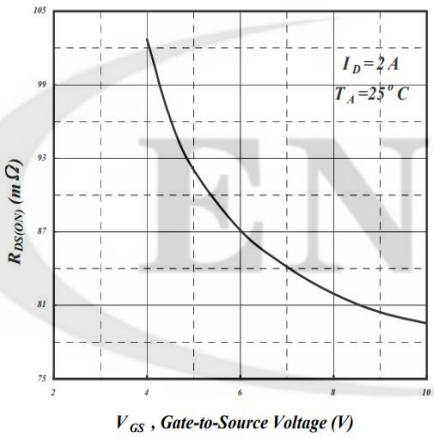


Fig 3. On-Resistance v.s. Gate Voltage

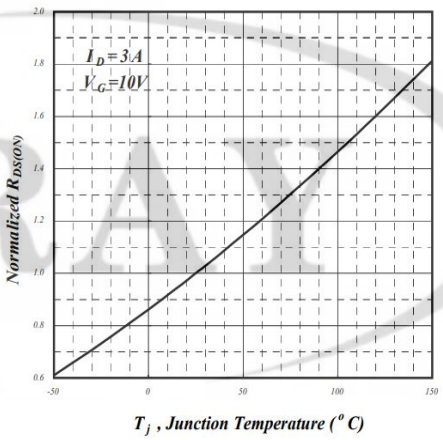


Fig 4. Normalized On-Resistance v.s. Junction Temperature

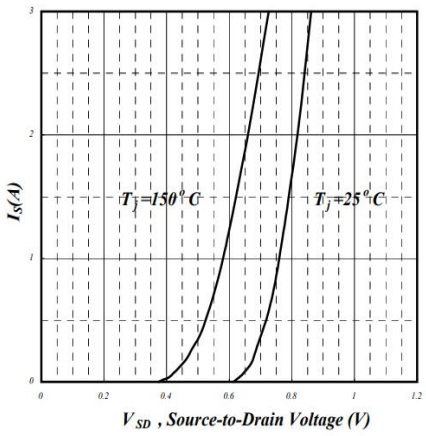


Fig 5. Forward Characteristic of Reverse Diode

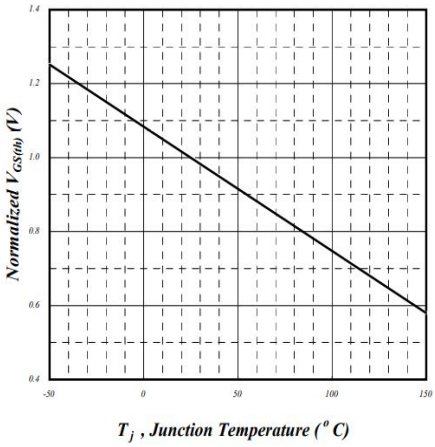


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

Typical Electrical and Thermal Characteristics

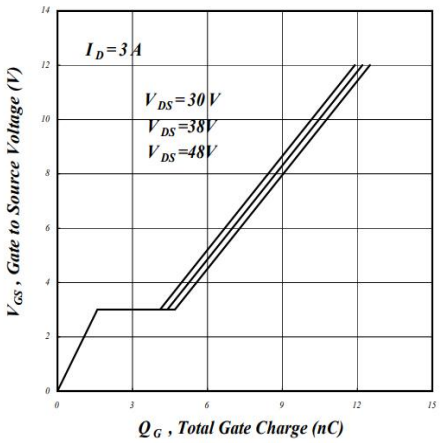


Fig 7. Gate Charge Characteristics

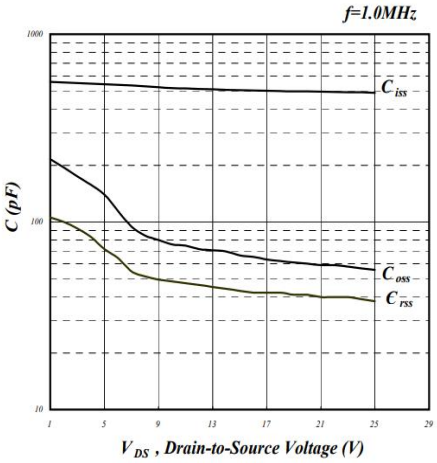


Fig 8. Typical Capacitance Characteristics

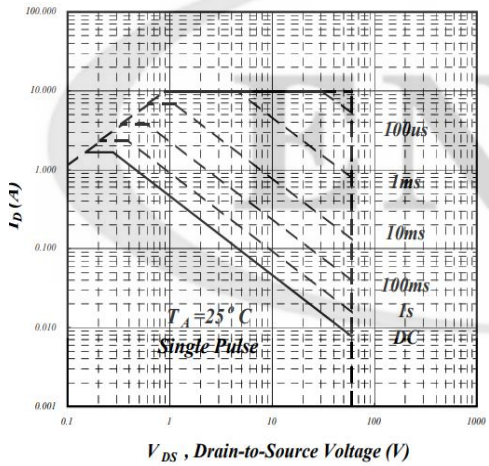


Fig 9. Maximum Safe Operating Area

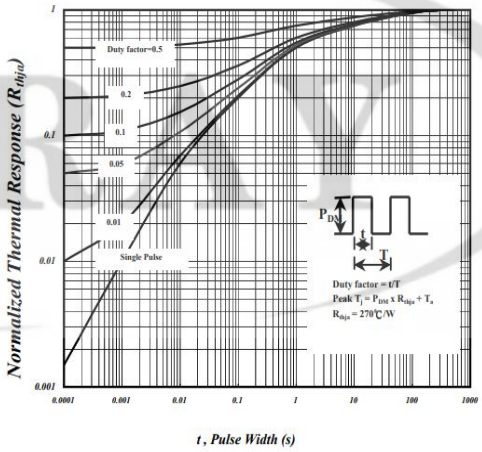
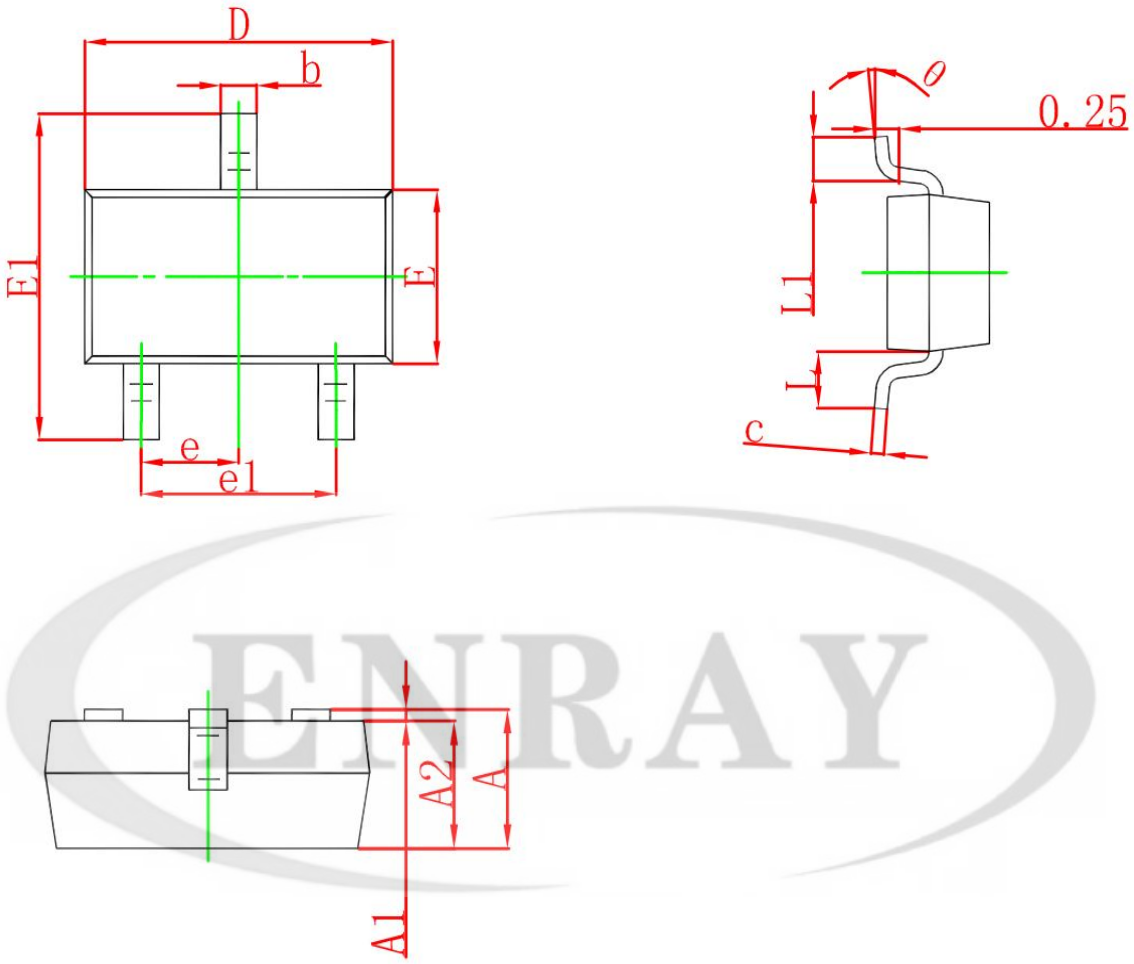


Fig 10. Effective Transient Thermal Impedance

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°