

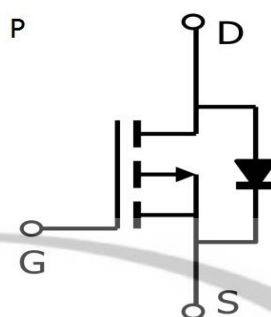
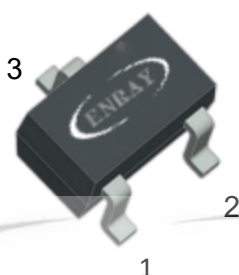
**ER3423A****-20V P-Channel MOSFET****Features**

- Trench FET Power MOSFET
- High Speed Switching

Product Summary

V_{DS}	-20V
I_D	-2A
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	< 118m Ω
$R_{DS(ON)}$ (at $V_{GS}=-2.5V$)	< 166m Ω

1.GATE
2.SOURCE
3.DRAIN

**Order Information**

Product	Package	Marking	Packing
ER3423A	SOT-23-3L	AS3A	3000PCS/Reel

Maximum Ratings($T_a=25^{\circ}C$ 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	-2	A
Pulsed Drain Current ①	I_{DM}	-18	
Continuous Source-Drain Current(Diode Conduction)	I_S	-1.2	
Power Dissipation ②	P_D	1.4	W
Thermal Resistance from Junction to Ambient ($t \leq 5s$)	$R_{\theta JA}$	125	$^{\circ}C/W$
Operating Junction	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}C$

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}	V _{GS} = 0V, I _D = -250μA	-20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250μA	-0.4		-1	V
Gate-Body leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = ±8V			±10	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20V, V _{GS} =0V			-1	μA
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -6A		59	118	mΩ
		V _{GS} = -2.5V, I _D = -4A		72	166	mΩ
Forward Transconductance	g _{Fs}	V _{DS} = -5V, I _D = -5A		7		S
Diode Forward Voltage	V _{SD}	I _S =-1A,V _{GS} =0V		-0.8	-1.2	V
Dynamic Parameters ④						
Input Capacitance	C _{iss}	V _{DS} = -4.5V,V _{GS} =0V, f=1MHz		325		pF
Output Capacitance	C _{oss}			63		pF
Reverse Transfer Capacitance	C _{rss}			37		pF
Total Gate Charge	Q _g	V _{DS} = -10V,V _{GS} = -4.5V, I _D = --2A		3.2		nC
Gate Source Charge	Q _{gs}			0.6		nC
Gate Drain Charge	Q _{gd}			0.9		nC
Gate Resistance	R _g	f=1MHz		11.2		Ω
Switching Parameters ④						
Turn-On DelayTime	t _{d(on)}	V _{DD} = -10V R _L =3Ω, I _D ≈ -1A, V _{GEN} =- 4.5V,R _g =3Ω		11		ns
Turn-On Rise Time	t _r			5.5		ns
Turn-Off DelayTime	t _{d(off)}			22		ns
Turn-Off Fall Time	t _f			8		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

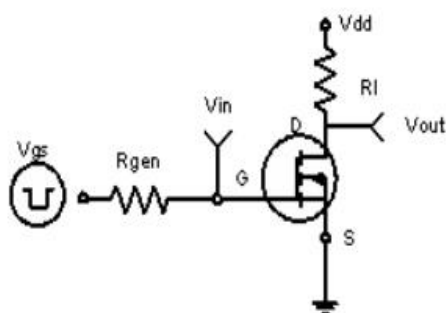


Figure 1: Switching Test Circuit

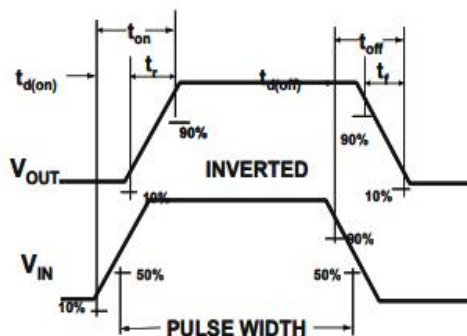


Figure 2: Switching Waveforms

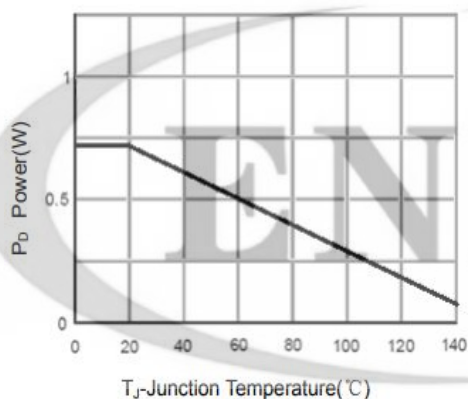


Figure 3 Power Dissipation

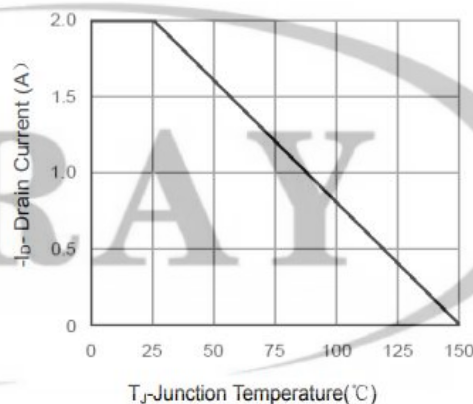


Figure 4 Drain Current

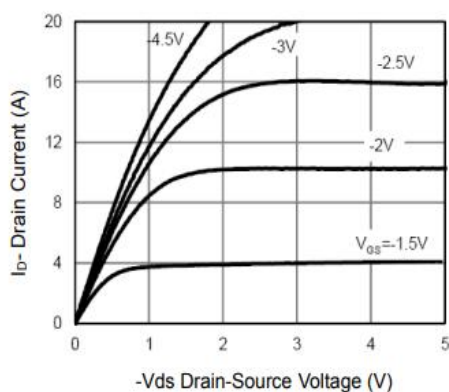


Figure 5 Output Characteristics

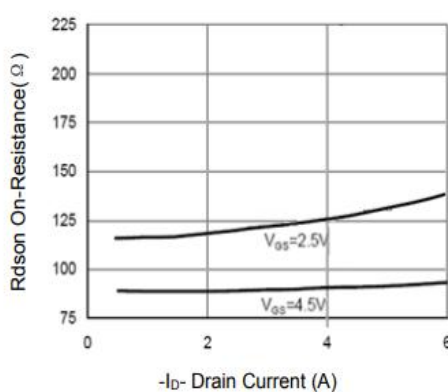
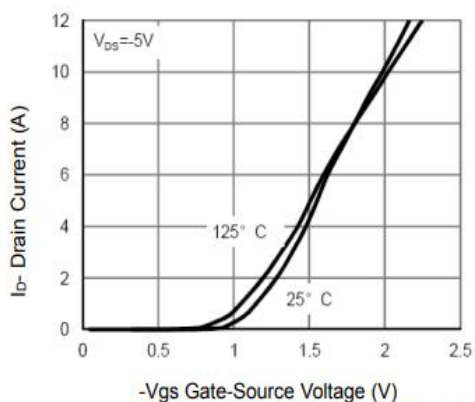
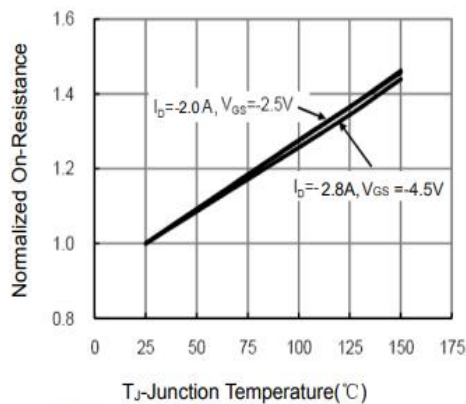
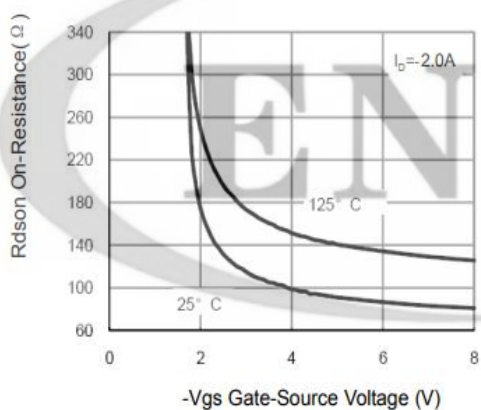
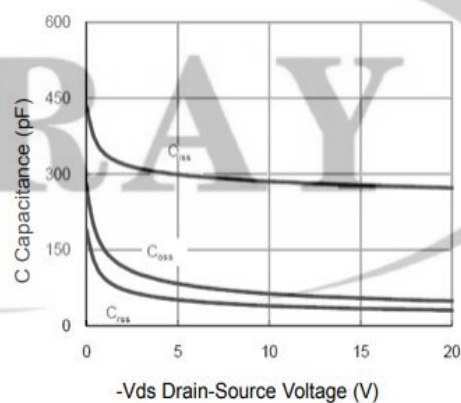
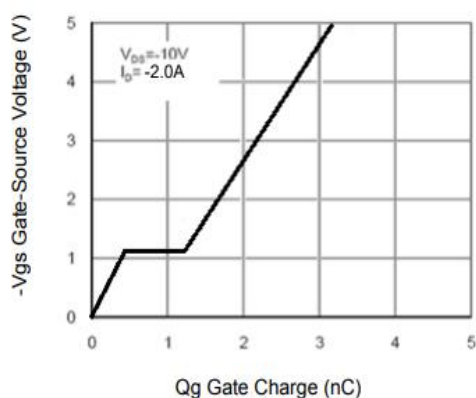
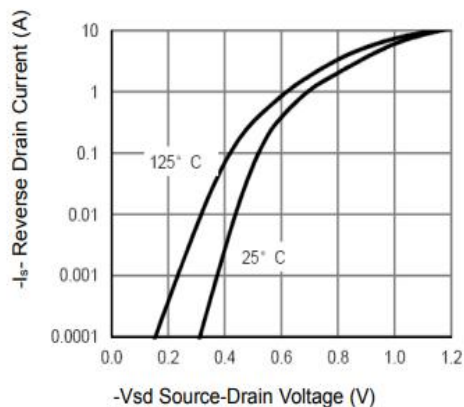


Figure 6 Drain-Source On-Resistance

Typical Electrical and Thermal Characteristics


Figure 7 Transfer Characteristics

Figure 8 Drain-Source On-Resistance

Figure 9 Rdson vs Vgs

Figure 10 Capacitance vs Vds

Figure 11 Gate Charge

Figure 12 Source- Drain Diode Forward

Typical Electrical and Thermal Characteristics

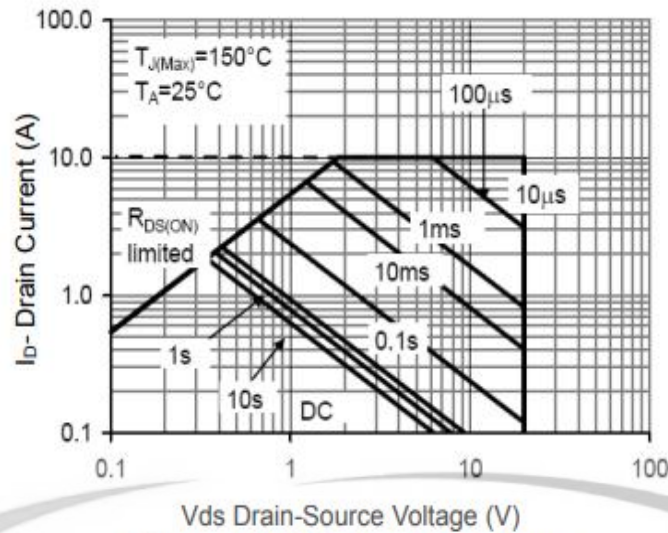


Figure 13 Safe Operation Area

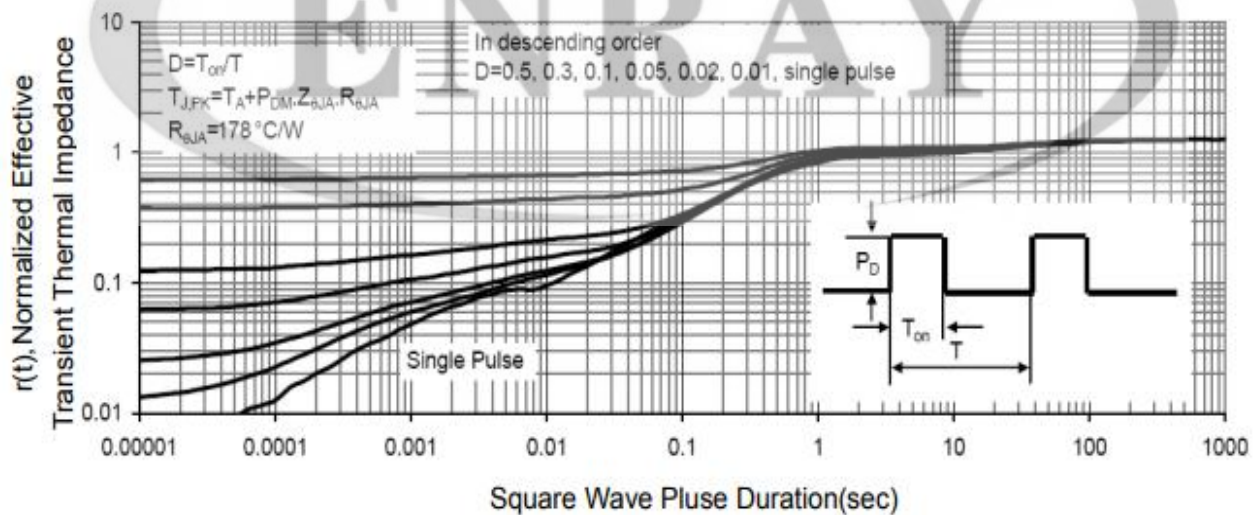
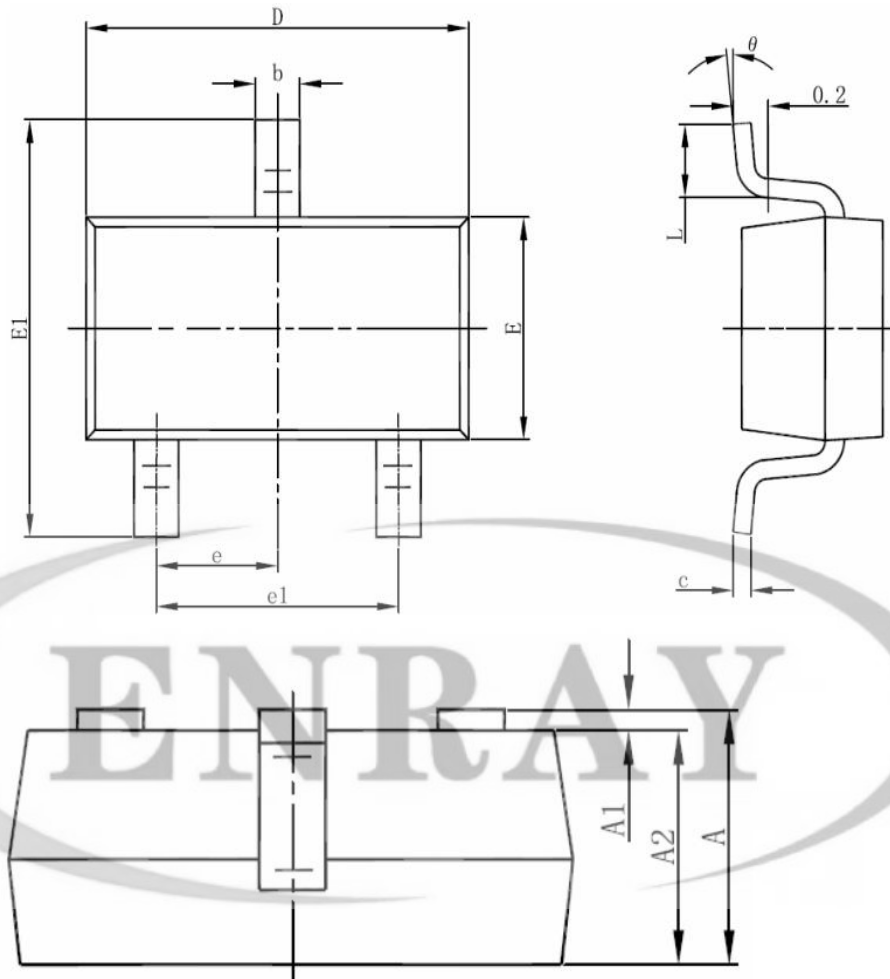


Figure 14 Normalized Maximum Transient Thermal Impedance

SOT-23-3L Package Outline Dimesions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037 (BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°