

# A3460A

N-Channel Enhancement Mode MOSFET



### Features

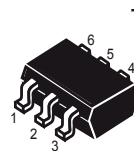
- High performance trench technology
- Low ON-resistance
- 2.5V gate drive
- Low profile surface mount package
- Lead (Pb) free product

### Product Summary

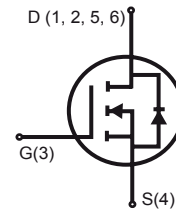
V <sub>DS</sub> (V)	I <sub>D</sub> (A)	R <sub>DS(ON)</sub> (mΩ) Max
20V	6A	27 @V <sub>GS</sub> = 4.5V
		40 @V <sub>GS</sub> = 2.5V

### Applications

- Load switch
- PWM application
- Power management



TSOP-6



### Absolute Maximum Ratings (T<sub>A</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate-Source Voltage	V <sub>GS</sub>	± 8	V
Drain Current-Continuous @ T <sub>c</sub> = 25°C	I <sub>D</sub>	6	A
-Pulsed <sup>b</sup>	I <sub>DM</sub>	20	A
Drain-Source Diode Forward Current <sup>a</sup>	I <sub>S</sub>	1.7	A
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	2.0	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

### Thermal Characteristics

Thermal Resistance, Junction-to-Ambient <sup>a</sup>	R <sub>θJA</sub>	100	°C/W
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### Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μA	20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> = 1mA	0.45			V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.1A		22	27	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =4.7A		31	40	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =5.1A		23		S
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =1A		0.75	1.2	V

### Dynamic

Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =8V		850		pF
Output Capacitance	C <sub>OSS</sub>	V <sub>GS</sub> =0V		160		
Reverse Transfer Capacitance	C <sub>RSS</sub>	f=1.0MHz		108		
Turn-On Delay Time	t <sub>D(ON)</sub>	V <sub>D</sub> =10V, I <sub>D</sub> =1A, V <sub>GEN</sub> =4.5V, R <sub>GEN</sub> =6Ω, R <sub>L</sub> =10Ω		13	25	ns
Rise Time	t <sub>r</sub>			29	50	
Turn-Off Delay Time	t <sub>D(OFF)</sub>			72	135	
Fall Time	t <sub>f</sub>			28	65	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V,		12	20	nC
Gate-Source Charge	Q <sub>gs</sub>	I <sub>D</sub> =5.1A,		2.2		
Gate-Drain Charge	Q <sub>gd</sub>	V <sub>GS</sub> =4.5V		2.0		

#### Notes:

- Surface Mounted on FR4 Board, t ≤ 10 sec.
- Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

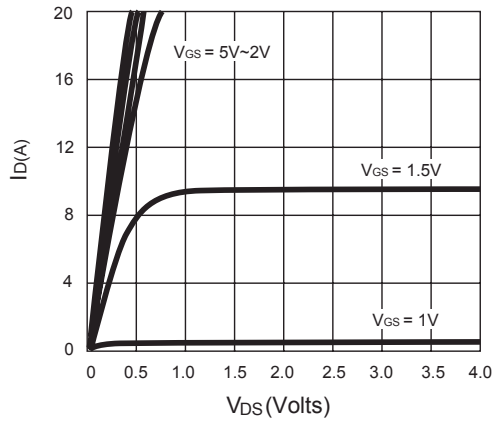


Figure 1. On-Regions Characteristics

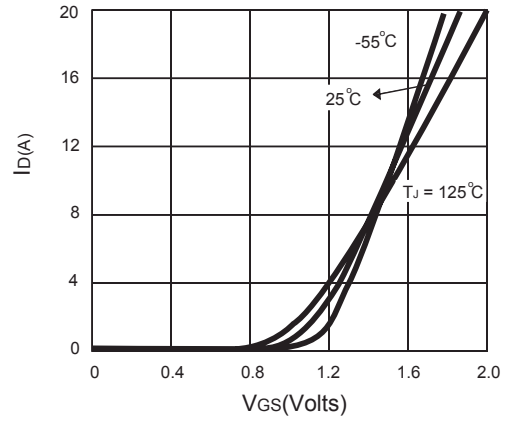


Figure 2. Transfer Characteristics

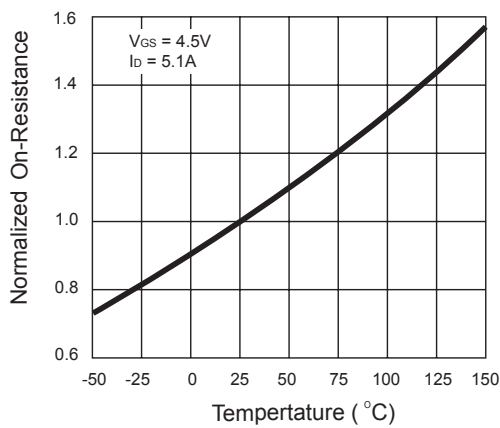


Figure 3. On-Resistance vs. Junction Temperature

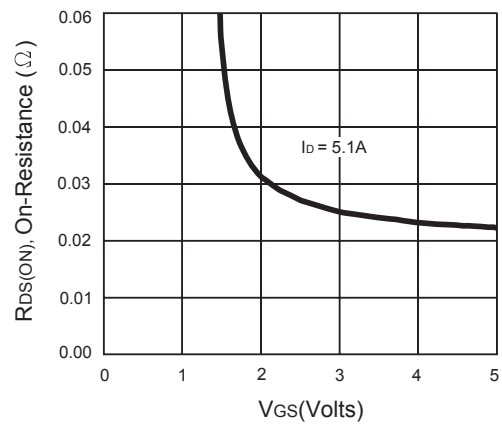


Figure 4. Gate to Source Variation with On-Resistance

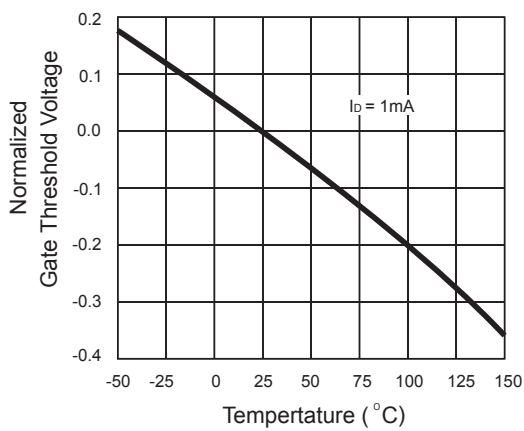


Figure 5. Gate Threshold vs. Junction Temperature

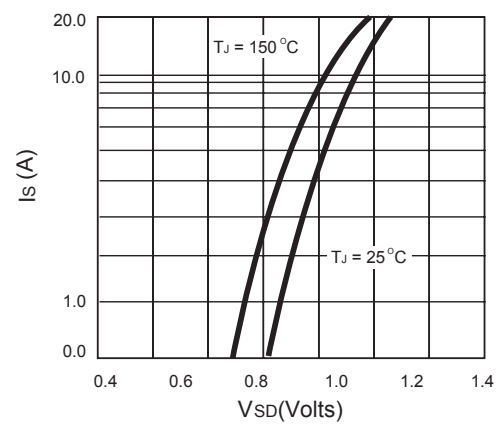


Figure 6. Body Diode Characteristics

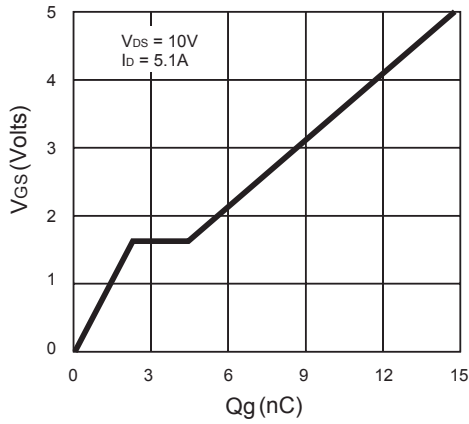


Figure 7. Gate-Charge Characteristics

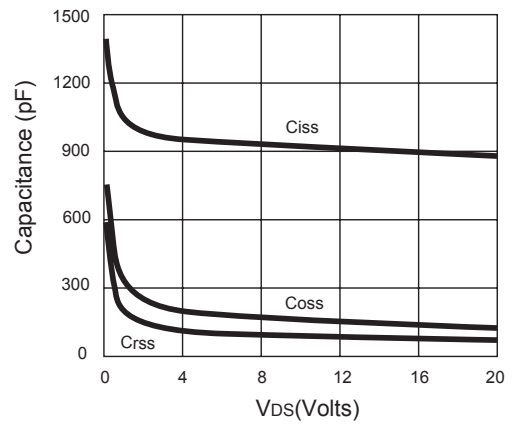


Figure 8. Capacitance Characteristics

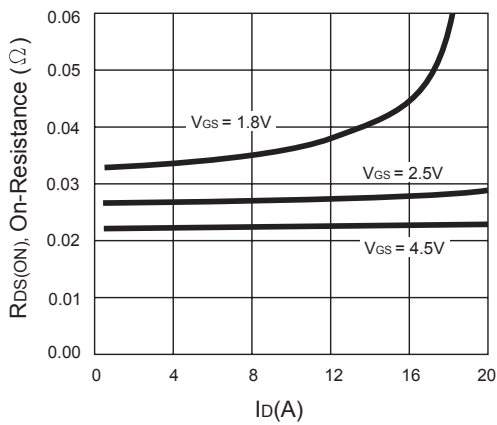


Figure 9. On-Resistance Variation with Drain Current

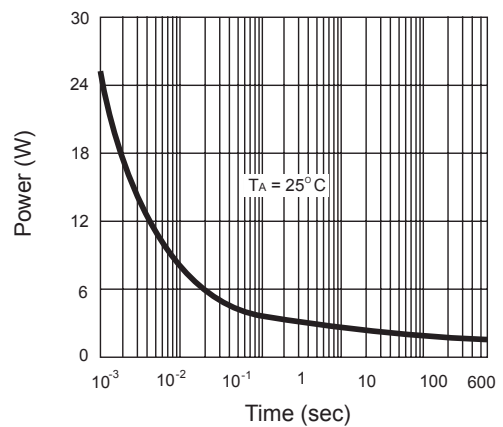


Figure 10. Single Pulse Power

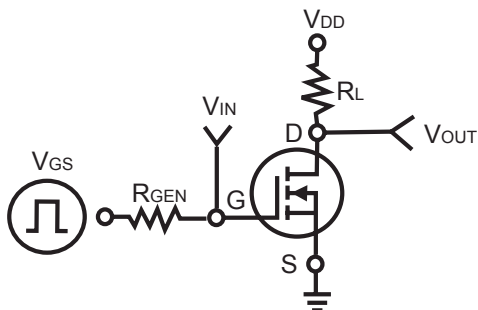


Figure 11. Switching Test Circuit

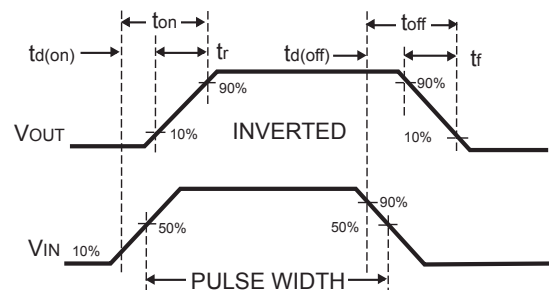


Figure 12. Switching Waveforms

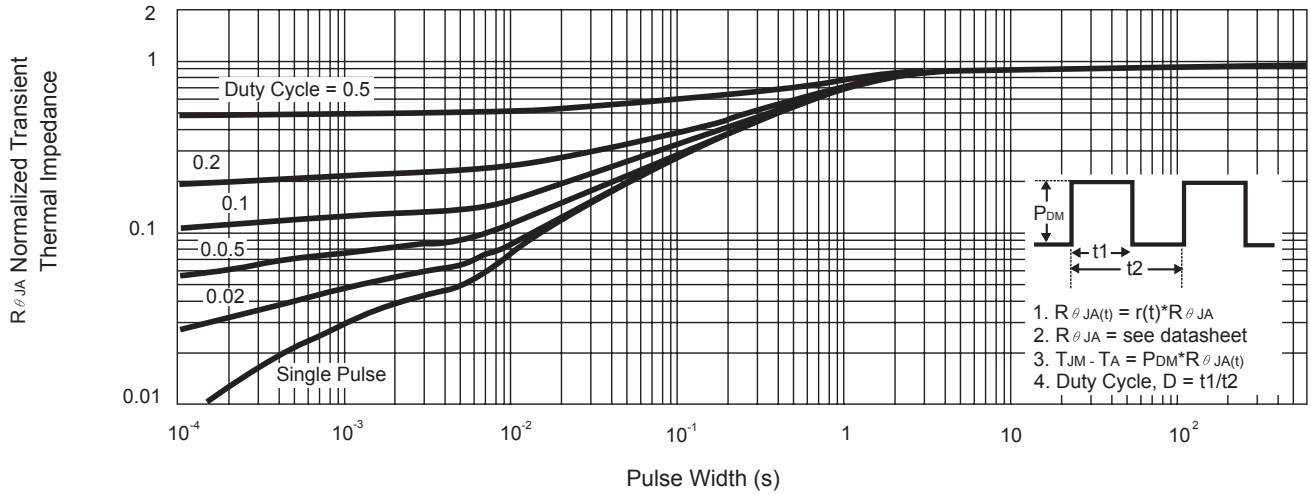


Figure 13. Normalized Maximum Transient Thermal Impedance