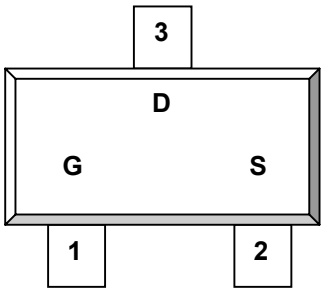
HM3422A

N Channel Enhancement Mode MOSFET

DESCRIPTION

The HM3422A is the N-Channel logic enhancement mode power field effect transistor is produced using high cell density, DMOS trench technology.
This high-density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high side switching.

PIN CONFIGURATION
SOT-23-3L

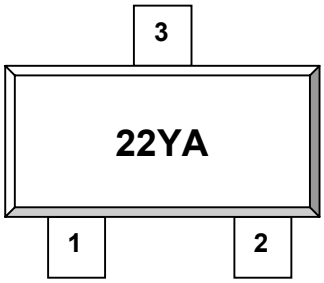


1.Gate 2.Source 3.Drain

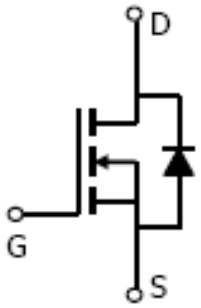
FEATURE

- 60V/6.0A, $R_{DS(ON)}$ = 28mΩ (Typ.)
  @V_{GS} = 10V
- 60V/2.5A, $R_{DS(ON)}$ = 38mΩ
  @V_{GS} = 4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

PART MARKING
SOT-23-3L



Y: Year Code A: Week Code



ABSOULTE MAXIMUM RATINGS (Ta = 25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain CurrentTJ=150℃)	T_A=25℃ T_A=70℃	I_D	6.0 4.6	A
Pulsed Drain Current		I_{DM}	20	A
Continuous Source Current (Diode Conduction)		I_S	1.7	A
Power Dissipation	T_A=25℃ T_A=70℃	P_D	2.0 1.3	W
Operation Junction Temperature		T_J	-55/150	℃
Storgae Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	75	℃/W

ELECTRICAL CHARACTERISTICS (Ta = 25℃ Unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=250uA	1		3	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V,V_{GS}=0V			1	uA
		V_{DS}=48V,V_{GS}=0V T_J=55℃			10	
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=6.0A V_{GS}=4.5V,I_D=2.5A		28 38	35 45	mΩ
Forward Transconductance	g_{fs}	V_{DS}=4.5V,I_D=5.8A		11		S
Diode Forward Voltage	V_{SD}	I_S=1.7A,V_{GS}=0V			1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=15V V_{GS}=10V I_D≡6.7A		10	22	nC
Gate-Source Charge	Q_{gs}			1.8		
Gate-Drain Charge	Q_{gd}			3.8		
Input Capacitance	C_{iss}	V_{DS}=15V V_{GS}=0V F=1MHz		455		pF
Output Capacitance	C_{oss}			243		
Reverse Transfer Capacitance	C_{rss}			38		
Turn-On Time	$t_{d(on)}$	V_{DD}=15V R_L=15Ω I_D=1.0A V_{GEN}=10V R_G=6Ω		8	15	nS
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			20	40	
	t_f			11	20	

TYPICAL CHARACTERICTICS (25℃ Unless noted)

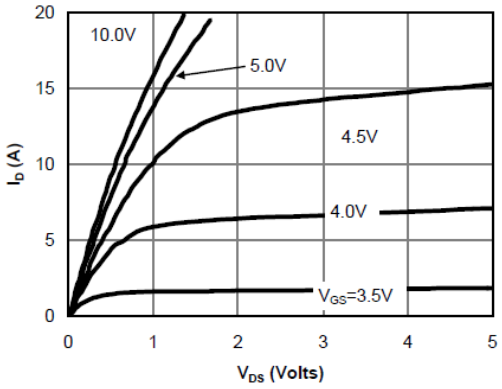


Fig 1: On-Region Characteristics

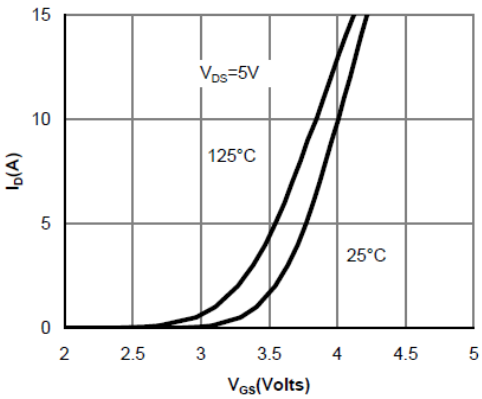


Figure 2: Transfer Characteristics

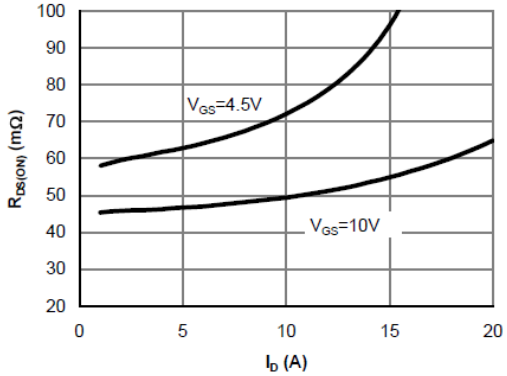


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

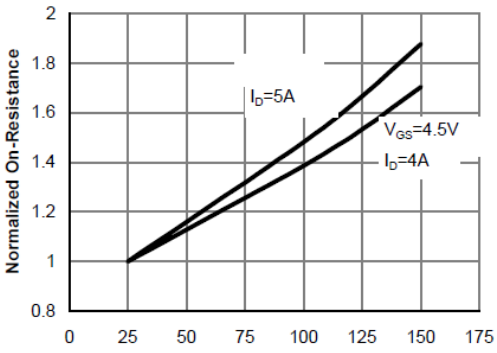


Figure 4: On-Resistance vs. Junction Temperature

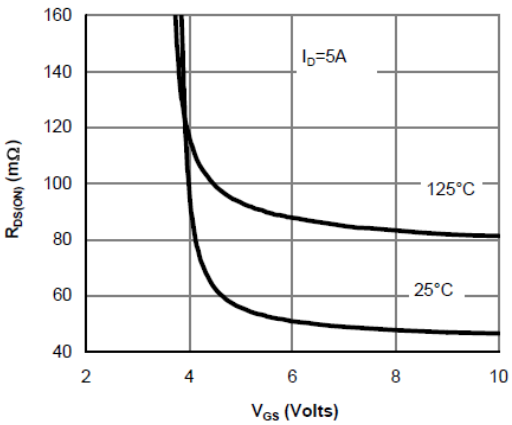


Figure 5: On-Resistance vs. Gate-Source Voltage

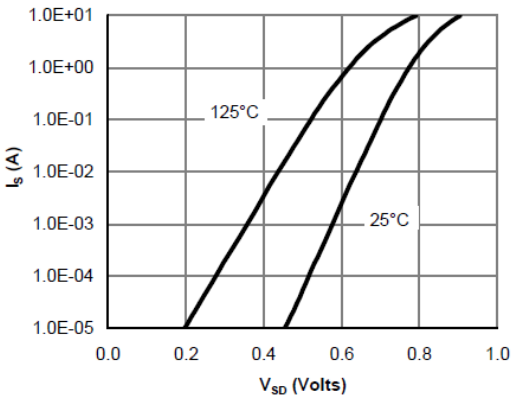


Figure 6: Body-Diode Characteristics

TYPICAL CHARACTERICTICS (25℃Unless noted)

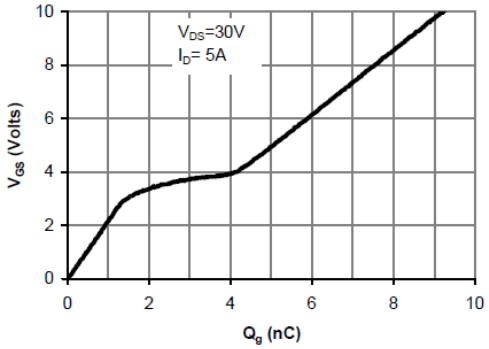


Figure 7: Gate-Charge Characteristics

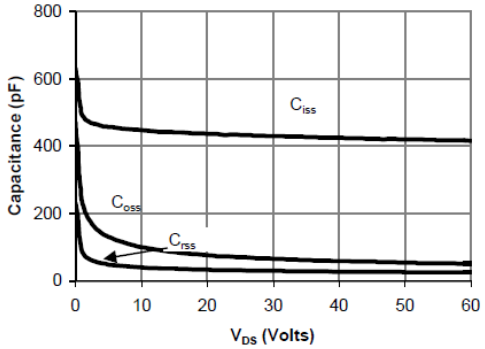


Figure 8: Capacitance Characteristics

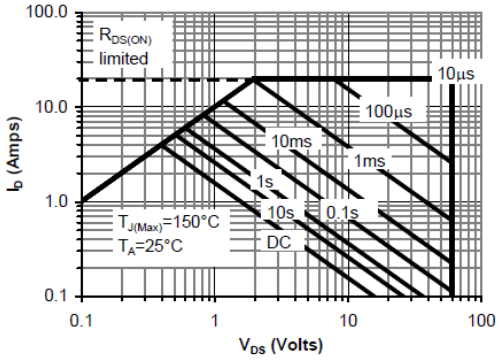


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

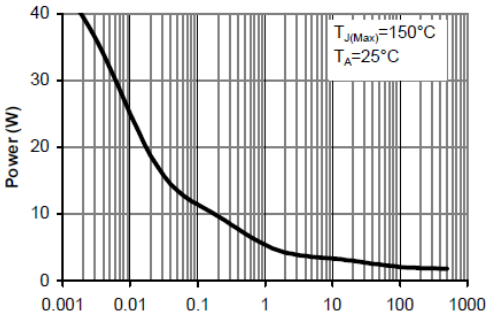


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

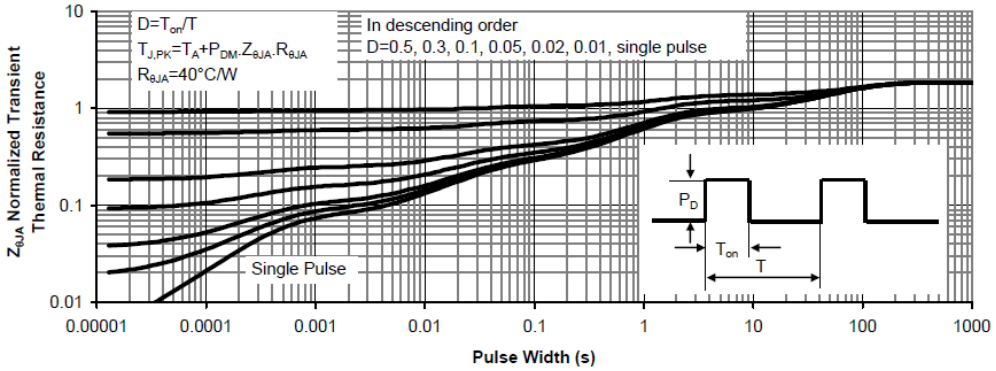
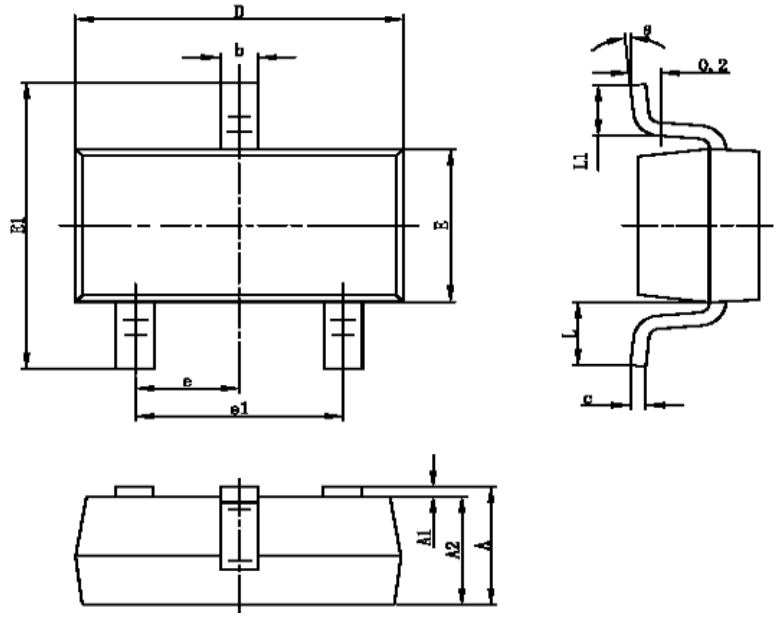


Figure 11: Normalized Maximum Transient Thermal Impedance

SOT-23-3L PACKAGE OUTLINE



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	0.400	0.012	0.016
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	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°