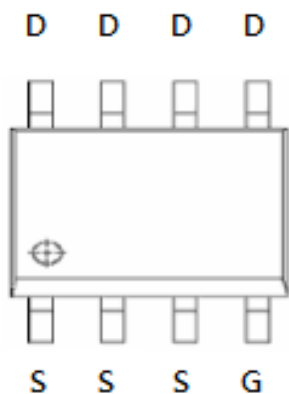


SCRIPTION

HM4441A is the P-Channel logic enhancement mode power field effect transistor which 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, notebook power management and other battery powered circuits where high-side switching.

PIN CONFIGURATION

SOP-8

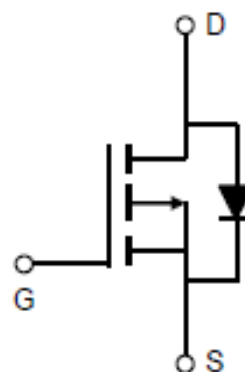
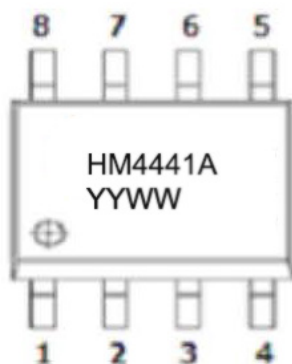


FEATURE

- -60V/-6.0A, $R_{DS(ON)} = 55m\Omega$ (Typ.) @ $V_{GS} = -10V$
- -60V/-5.0A, $R_{DS(ON)} = 73m\Omega$ @ $V_{GS} = -4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP-8 package design

PART MARKING

SOP-8



YM : Year Code

KK : Date Code

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V _{DSS}	-60	V
Gate-Source Voltage		V _{GSS}	±20	V
Continuous Drain Current (T _J =150°C)	T _A =25°C T _A =70°C	I _D	-6 -4.2	A
Pulsed Drain Current		I _{DM}	-40	A
Continuous Source Current (Diode Conduction)		I _S	-3	A
Power Dissipation	T _A =25°C T _A =70°C	P _D	2.3 1.3	W
Operation Junction Temperature		T _J	-55/150	°C
Storage Temperature Range		T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient		R _{θJA}	70	°C/W

ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.8		-2.5	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-48V, V_{GS}=0V$			-1	uA
		$V_{DS}=-48V, V_{GS}=0V$ $T_J=85^\circ C$			-10	
Drain-source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-6A$ $V_{GS}=-4.5V, I_D=-5A$		0.053 0.071	0.060 0.081	Ω
Forward Tran Conductance	g_{fs}	$V_{DS}=-5V, I_D=-5.9A$		18		S
Diode Forward Voltage	V_{SD}	$I_S=-2.3A, V_{GS}=0V$		-0.7	-1.0	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=-30V, V_{GS}=-10V$ $I_D=-5.0A$		47	55	nC
Gate-Source Charge	Q_{gs}			5.8		
Gate-Drain Charge	Q_{gd}			9.3		
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V$ $f=1MHz$		2410		pF
Output Capacitance	C_{oss}			179		
Reverse Transfer Capacitance	C_{rss}			125		
Turn-On Time	$t_{d(on)}$ t_r	$V_{DS}=-30V, R_L=4.7\Omega$ $V_{GS}=-10V, R_{GEN}=3\Omega$		9		nS
				6.2		
Turn-Off Time	$t_{d(off)}$ t_f			25		
				13.2		

TYPICAL CHARACTERISTICS

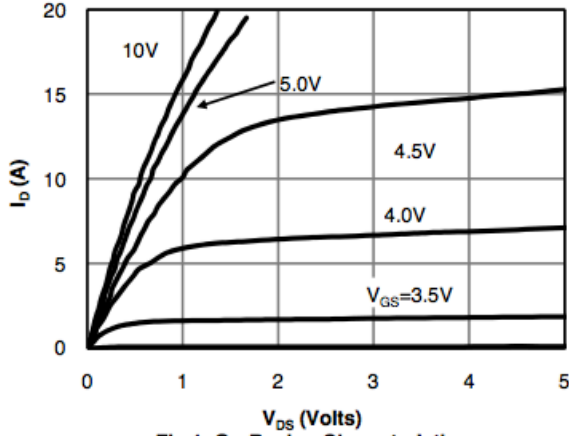


Fig 1: On-Region Characteristics

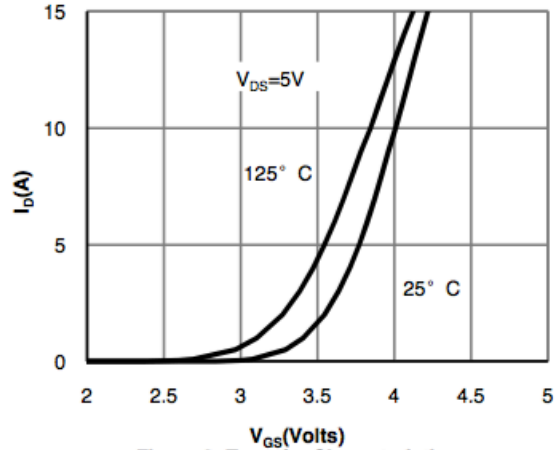


Figure 2: Transfer Characteristics

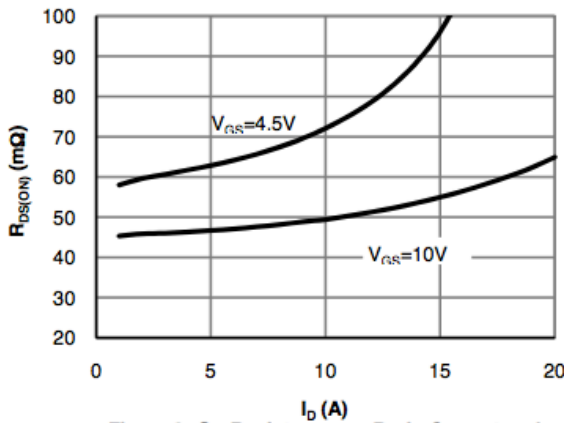


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

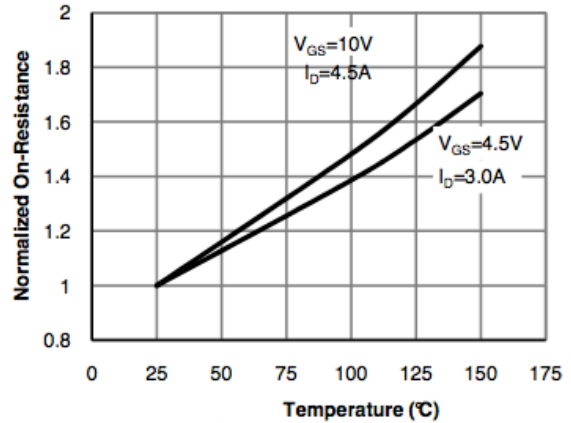


Figure 4: On-Resistance vs. Junction Temperature

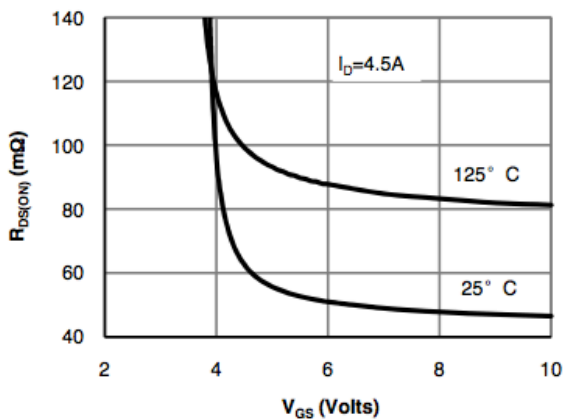


Figure 5: On-Resistance vs. Gate-Source Voltage

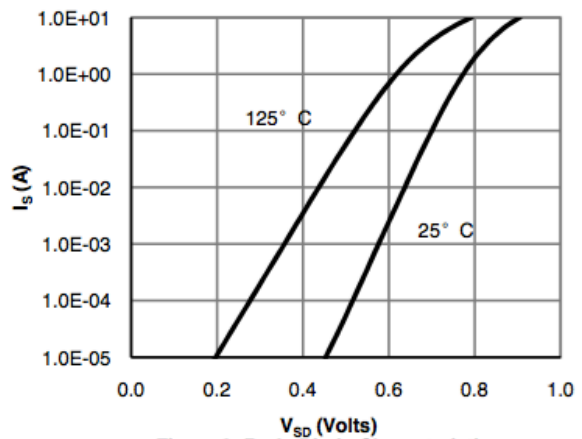


Figure 6: Body-Diode Characteristics

TYPICAL CHARACTERISTICS

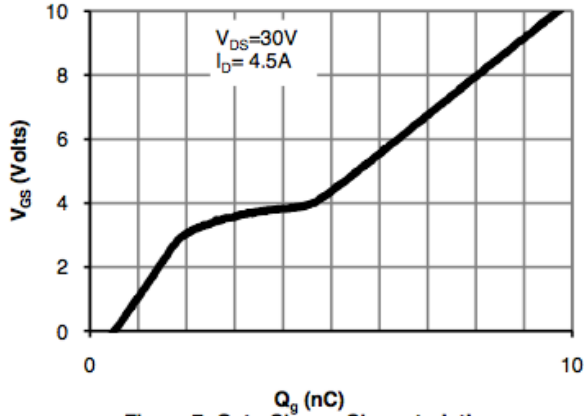


Figure 7: Gate-Charge Characteristics

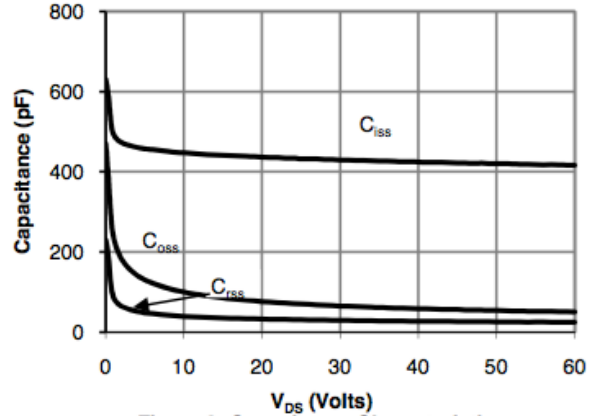


Figure 8: Capacitance Characteristics

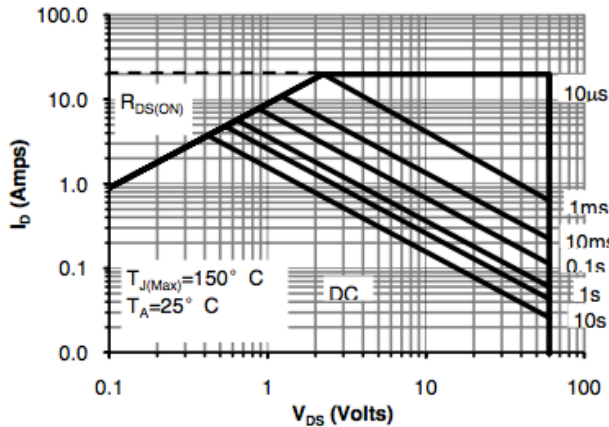


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

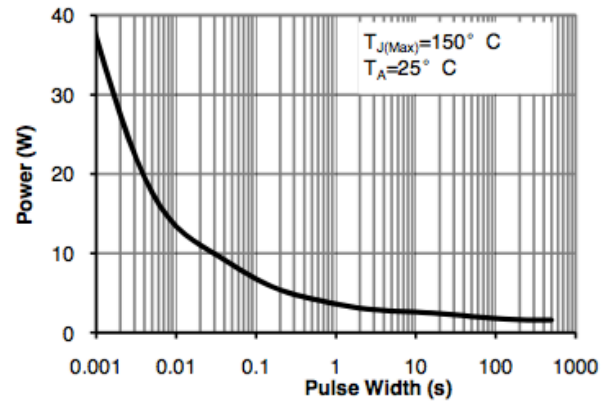


Figure 10: Single Pulse Power Rating Junction-Ambient (Note E)

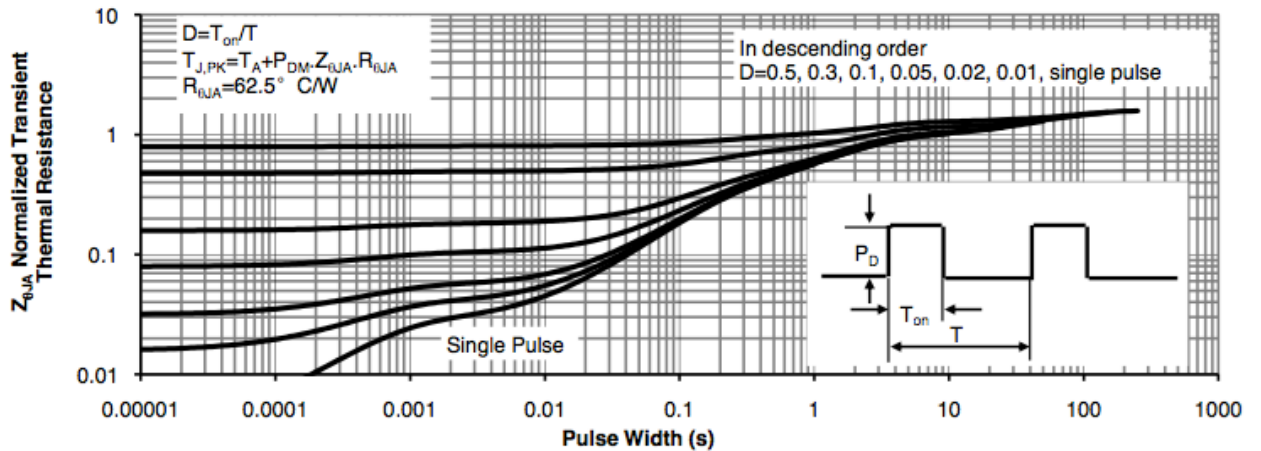
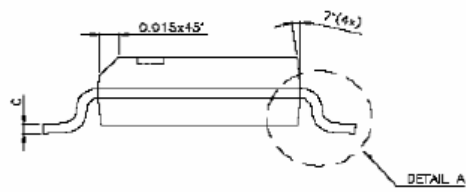
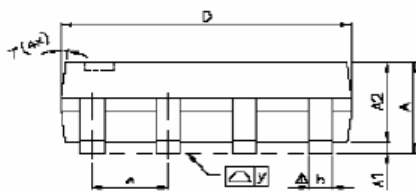
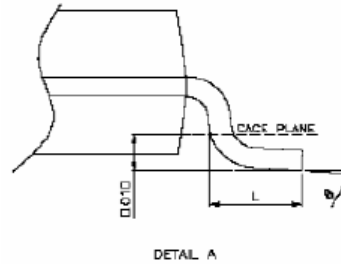
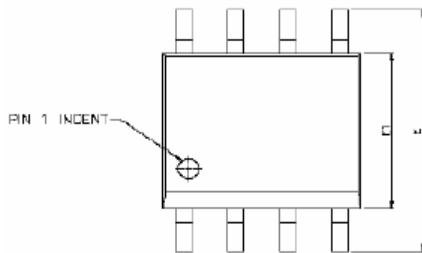


Figure 11: Normalized Maximum Transient Thermal Impedance

SOP-8 PACKAGE OUTLINE



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
Δ y	—	—	0.076	—	—	0.003
\varnothing	0°	—	8°	0°	—	8°