

MT4435A

P-Channel Enhancement Mode Field Effect Transistor

Product Summary

PRODUCT SUMMARY		
V _{DSS}	I _D	R _{DS(ON)} (m Ω) Typ
-30V	-7A	20 @V _{GS} =-10V
		30 @V _{GS} =-4.5V

Features

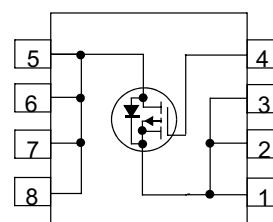
- Supper high dense cell design for low R_{DS(ON)}
- Rugged and reliable
- Simple drive requirement
- SO-8 Package



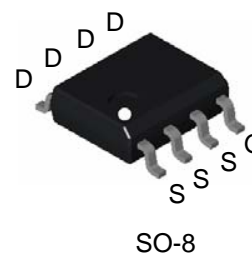
MT Semiconductor®

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Simplified Schematic



MARKING DIAGRAM & PIN ASSIGNMENT



Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous ^a @T _j =125 °C	I _D	-7	A
- Pulse d^b	I _{DM}	-25	A
Drain-source Diode Forward Current ^a	I _S	-7.0	A
Maximum Power Dissipation ^a	P _D	2.5	W
Operating Junction and Storage Temperature Range	T _j ,T _{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to Ambient ^a	R _{th JA}	50	°C/W
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ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V,I _D =-250μA	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V,V _{GS} =0V			-1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±20V,V _{DS} =0V			±100	nA
ON CHARACTERITICS						
Gate Threshold Voltage	V _{GS} (th)	V _{DS} =V _{GS} ,I _D =-250μA	-1	-1.7	-2.5	V
Drain-Source On-State Resistance	R _{DS} (ON)	V _{GS} =-10V,I _D =-8A		20	22	m Ω
		V _{GS} =-4.5V,I _D =-5.0A		30	35	
Forward Transconductance	g _{FS}	V _{GS} =-15V,I _D =-8A		6		S
DAYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{DS} =-15V,V _{GS} =0V f=1.0MHz		1119		pF
Output Capacitance	C _{OSS}			363		pF
Reverse Transfer Capacitance	C _{RSS}			138		pF
SWITCHING CHARACTERISISTICS						
Turn-On Delay Time	t _D (ON)	V _{DD} =-15V I _D =-8A, V _{GEN} =-4.5V R _L =10ohm R _{GEN} =6ohm		17.8		ns
Rise Time	t _r			17.5		ns
Turn-Off Delay Time	t _D (OFF)			169		ns
Fall Time	t _f			96		ns
Total Gate Charge	Q _g	V _{DS} =-15V,I _D =-1A V _{GS} =-10V		35		nC
Gate-Source Charge	Q _{gs}			3.3		nC
Gate-Drain Charge	Q _{gd}			8.1		nC

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-1.7A		-0.74	-1.2	V

Notes

- Surface Mounted on FR4 Board, $t \leq 10\text{sec}$
- Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty $\leq 2\%$
- Guaranteed by design, not subject to production testing.

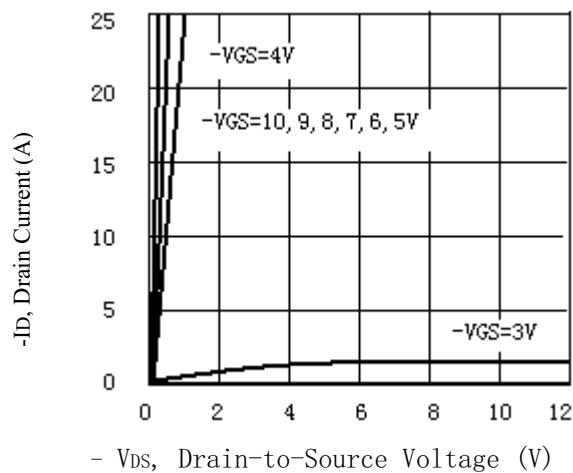


Figure 1. Output Characteristics

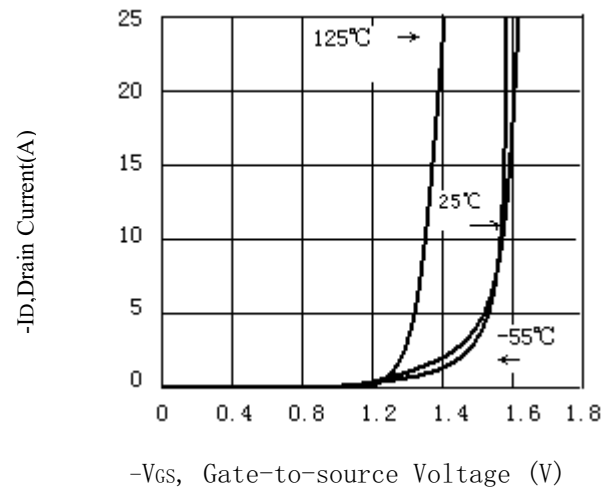


Figure 2. Transfer Characteristics

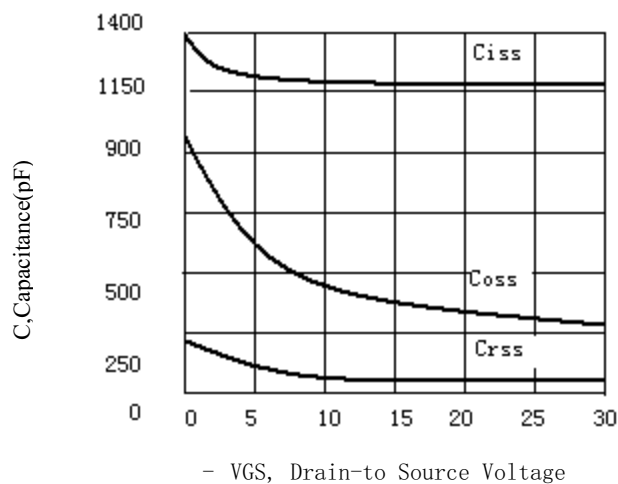


Figure3. Capacitance

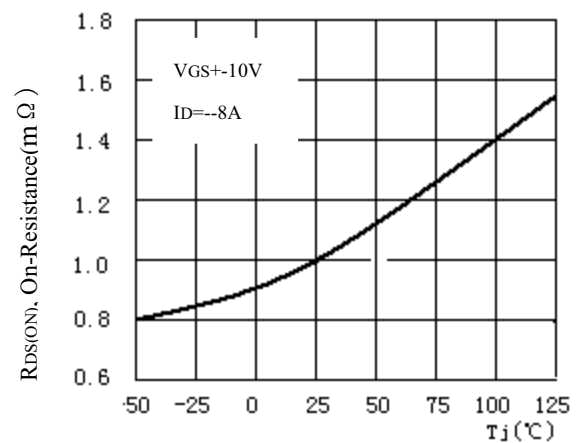
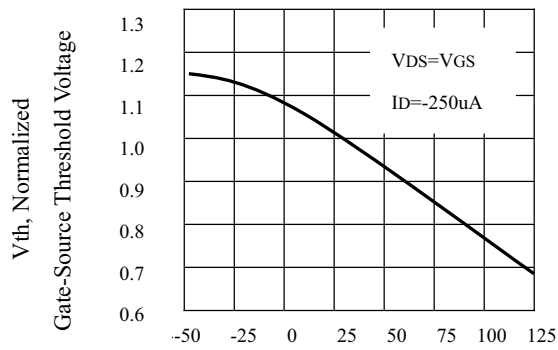
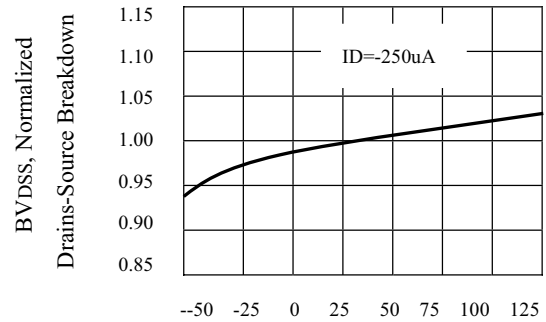


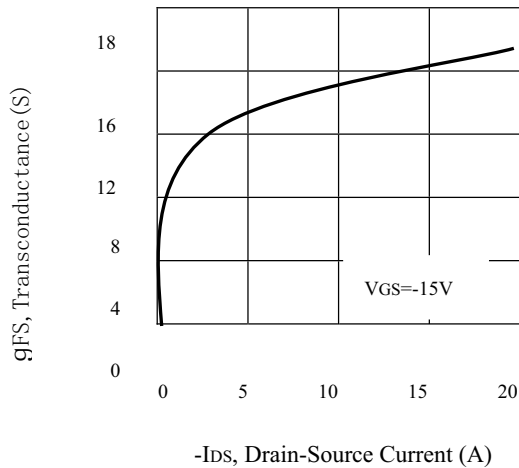
Figure4. On-Resistance Variation with Temperature



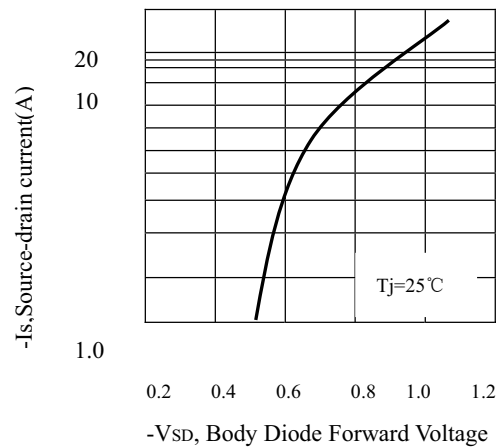
Tj, Junction Temperature(°C)
Figure5. Gate Threshold Variation
With Temperature



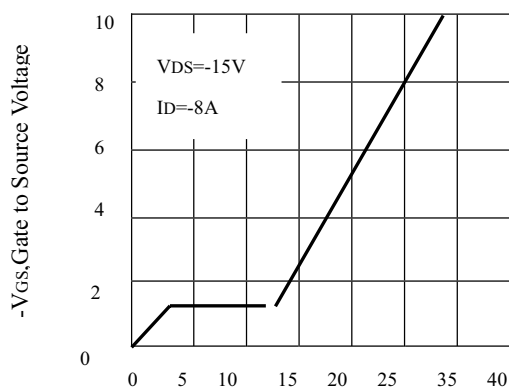
Tj, Junction Temperature (°C)
Figure6. Breakdown Voltage Variation
With Temperature



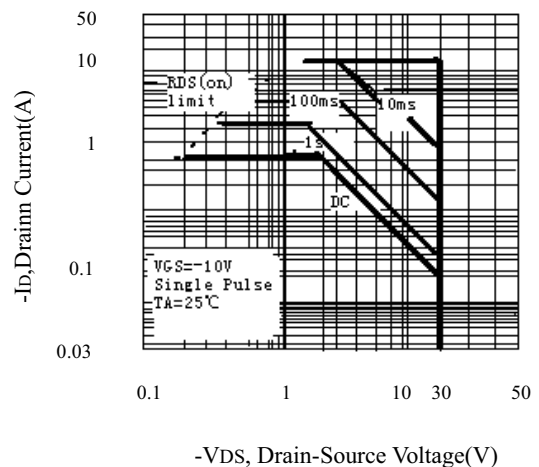
-IDS, Drain-Source Current (A)
Figure7. Transconductance Variation
With Drain Current



-VSD, Body Diode Forward Voltage
Figure8. Body Diode Forward Voltage
Variation with Source Current



Qg, Total Gate Charge(nC)
Figure9. Gate Charge



-VDS, Drain-Source Voltage(V)
Figure10. Maximum Safe Operating Area

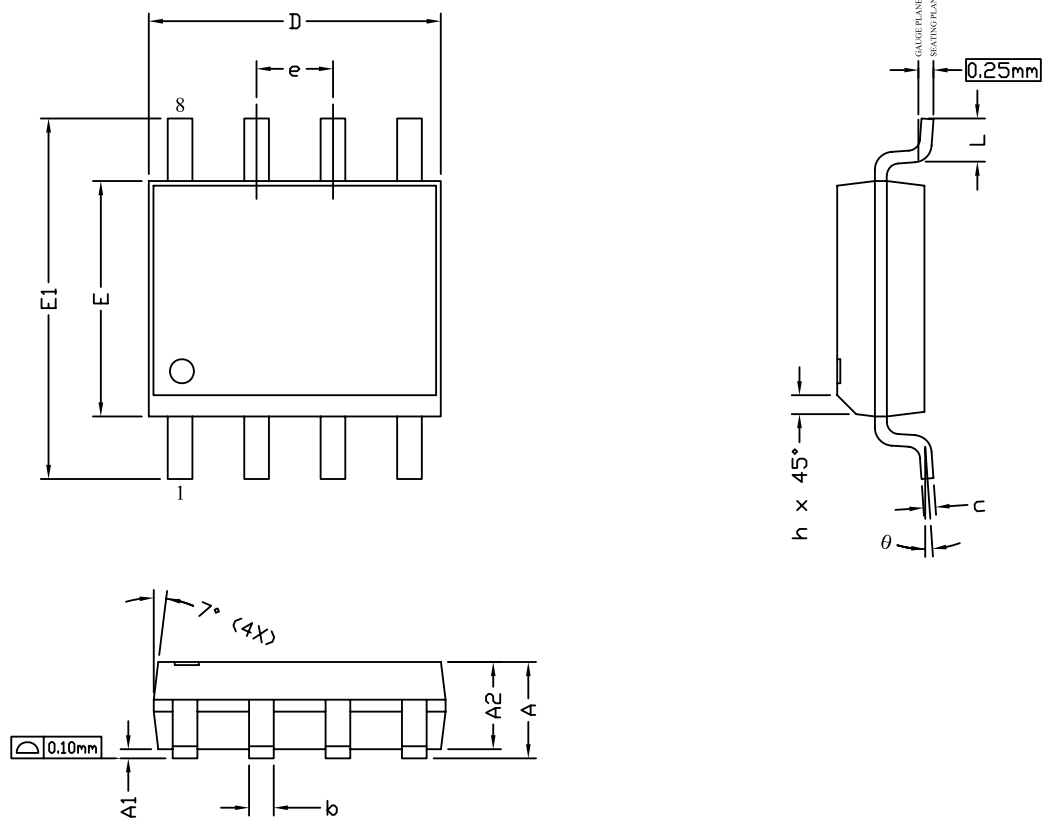
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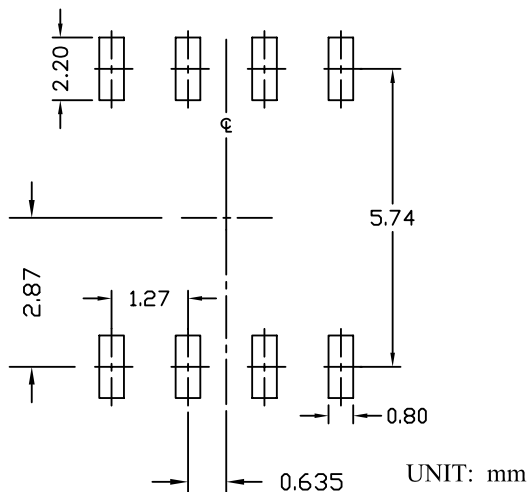
Version

rev H

S08 PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.35	1.65	1.75	0.053	0.065	0.069
A1	0.10	—	0.25	0.004	—	0.010
A2	1.25	1.50	1.65	0.049	0.059	0.065
b	0.31	—	0.51	0.012	—	0.020
c	0.17	—	0.25	0.007	—	0.010
D	4.80	4.90	5.00	0.189	0.193	0.197
E	3.80	3.90	4.00	0.150	0.154	0.157
e	1.27 BSC			0.050 BSC		
E1	5.80	6.00	6.20	0.228	0.236	0.244
h	0.25	—	0.50	0.010	—	0.020
L	0.40	—	1.27	0.016	—	0.050
θ	0°	—	8°	0°	—	8°

NOTE

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONS ARE INCLUSIVE OF PLATING.
3. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 6 MILS EACH.
4. DIMENSION L IS MEASURED IN GAUGE PLANE.
5. CONTROLLING DIMENSION IS MILLIMETER.
CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.

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