

P-Channel Enhancement Mode Field Effect Transistor

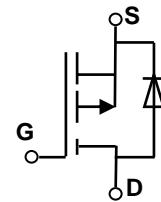
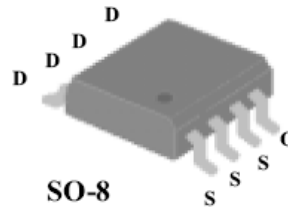
FEATURES

- Super high dense cell design for low $R_{DS(ON)}$
- Rugged and reliable
- Simple drive requirement
- SOP-8 package

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (m Ω) Typ
-30V	-8A	15 @ $V_{GS}=-10V$
		22 @ $V_{GS}=-4.5V$



NOTE: The MT4435A is available in a lead-free package



ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 25	V
Drain Current-Continuous ^a @ $T_j=125^{\circ}C$ - Pulse d^b	I_D	-8	A
	I_{DM}	-40	A
Drain-source Diode Forward Current ^a	I_S	-2.4	A
Maximum Power Dissipation ^a	P_D	2.5	W
Operating Junction and Storage Temperature Range	T_j, T_{STG}	-55 to 150	$^{\circ}C$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to Ambient ^a	$R_{th JA}$	50	$^{\circ}C/W$
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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 CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.6	-2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-8A		15	20	mΩ
		V _{GS} =-4.5V, I _D =-5.0A		22	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

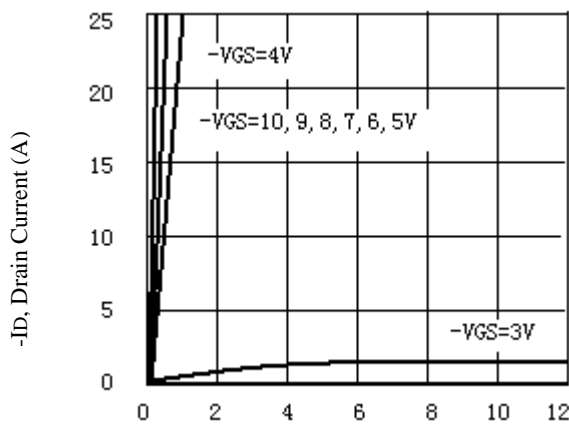


ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

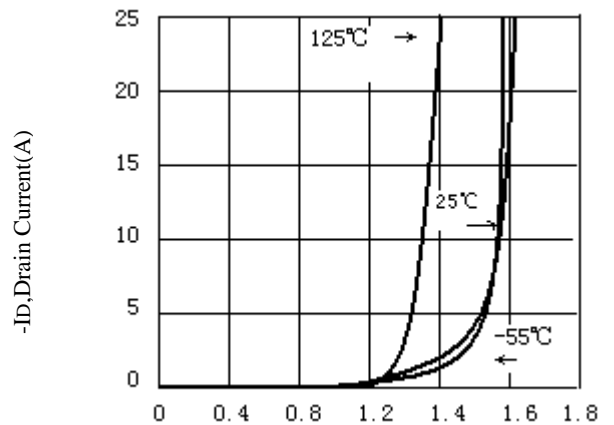
Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage	VSD	VGS=0V, Is=-1.7A		-0.74	-1.2	V

Notes

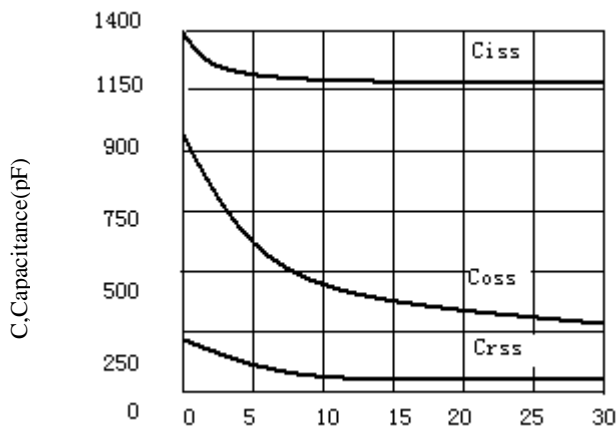
- a. Surface Mounted on FR4 Board, $t \leq 10\text{sec}$
- b. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty $\leq 2\%$
- c. Guaranteed by design, not subject to production testing.



- V_{DS} , Drain-to-Source Voltage (V)
Figure 1. Output Characteristics



- V_{GS} , Gate-to-source Voltage (V)
Figure 2. Transfer Characteristics



- V_{GS} , Drain-to Source Voltage
Figure 3. Capacitance

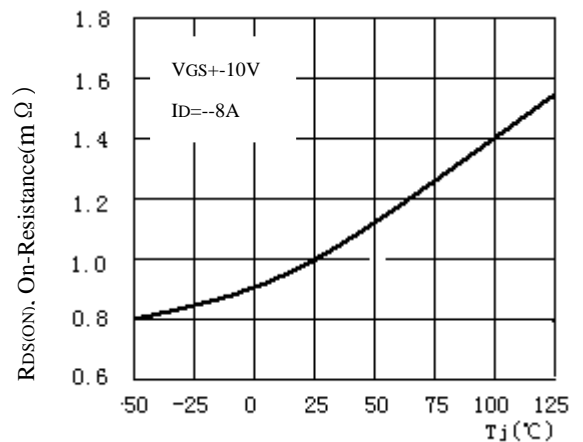
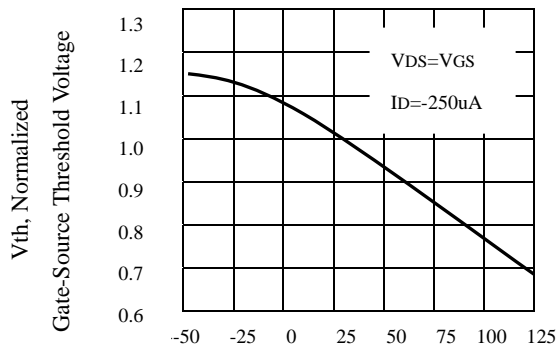
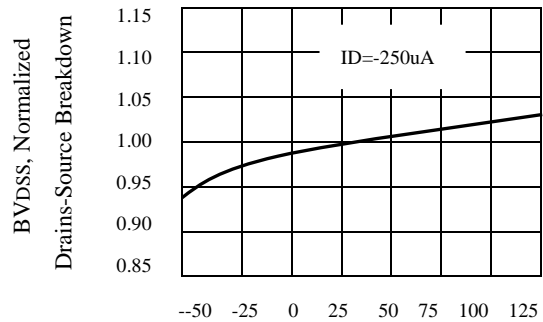


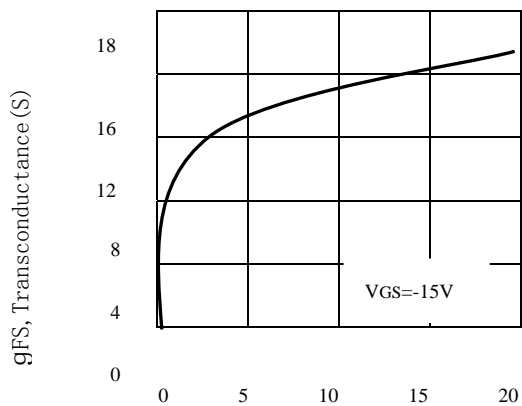
Figure 4. On-Resistance Variation with Temperature



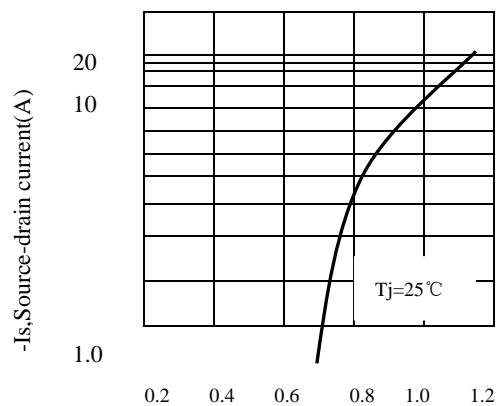
Tj, Junction Temperature(°C)
Figure5.Gate Threshold Variation With Temperature



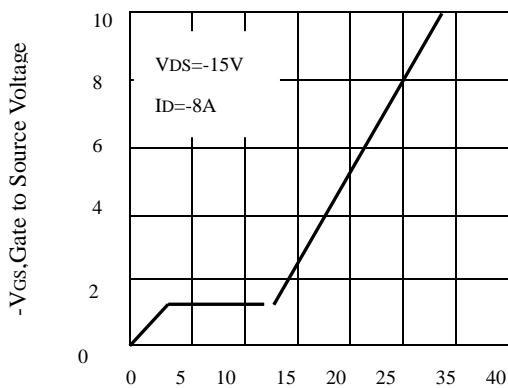
Tj, Junction Temperature (°C)
Figure6.Breakdown Voltage Variation With Temperature



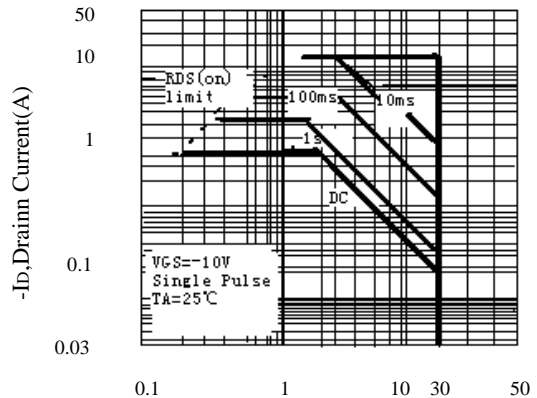
-IDS, Drain-Source Current (A)
Figure7.Transconductance Variation With Drain Current



-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