

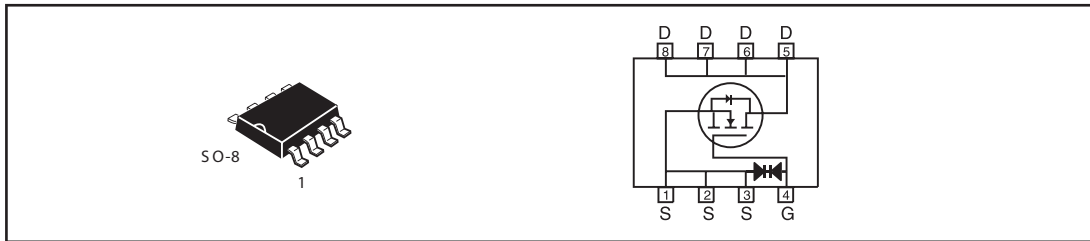


N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
40V	7 A	24 @ V _{GS} = 10V 30 @ V _{GS} = 4.5V

FEATURES

- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- Surface Mount Package.
- ESD Protected.



ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	40	V	
Gate-Source Voltage	V _{GS}	±20	V	
Drain Current-Continuous ^a @ T _a	I _D	25°C	7	A
		70°C	5.9	A
-Pulsed ^b	I _{DM}	28	A	
Drain-Source Diode Forward Current ^a	I _S	1.7	A	
Maximum Power Dissipation ^a	P _D	T _a =25°C	3	W
		T _a =70°C	2.1	
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C	

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	R _{θJA}	40	°C/W
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N-Channel ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250uA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 32V, V _{GS} = 0V			1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±10	uA
ON CHARACTERISTICS^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1	1.8	3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 7A		18	24	m ohm
		V _{GS} = 4.5V, I _D = 5A		23	30	m ohm
On-State Drain Current	I _{D(ON)}	V _{DS} = 5V, V _{GS} = 10V	15			A
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 7A		12.5		S
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C _{ISS}	V _{DS} = 20V, V _{GS} = 0V f = 1.0MHz		700		pF
Output Capacitance	C _{OSS}			140		pF
Reverse Transfer Capacitance	C _{RSS}			80		pF
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 20V I _D = 1 A V _{GS} = 10V R _{GEN} = 3.3 ohm		13.4		ns
Rise Time	t _r			12.5		ns
Turn-Off Delay Time	t _{D(OFF)}			43.3		ns
Fall Time	t _f			8.5		ns
Total Gate Charge	Q _g	V _{DS} = 20V, I _D = 7A, V _{GS} = 10V		13.5		nC
		V _{DS} = 20V, I _D = 7A, V _{GS} = 4.5V		6.7		nC
Gate-Source Charge	Q _{gs}	V _{DS} = 20V, I _D = 7 A V _{GS} = 4.5V		1.8		nC
Gate-Drain Charge	Q _{gd}			2.4		nC

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ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS ^b						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 1.7A$		0.78	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 Cycle $\leq 2\%$.
- c. Guaranteed by design, not subject to production testing.

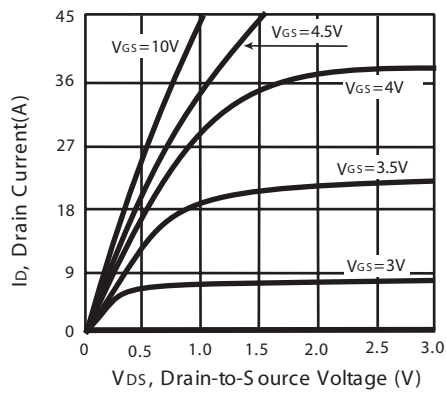


Figure 1. Output Characteristics

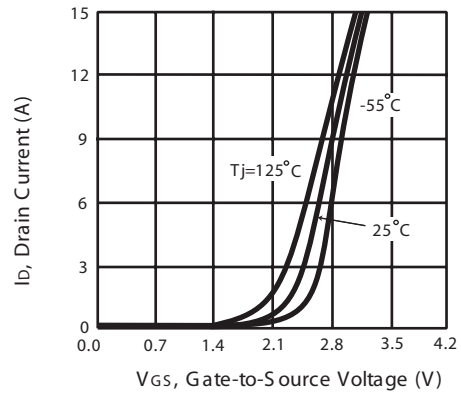


Figure 2. Transfer Characteristics

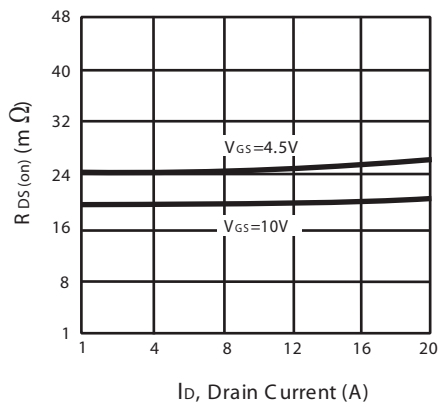


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

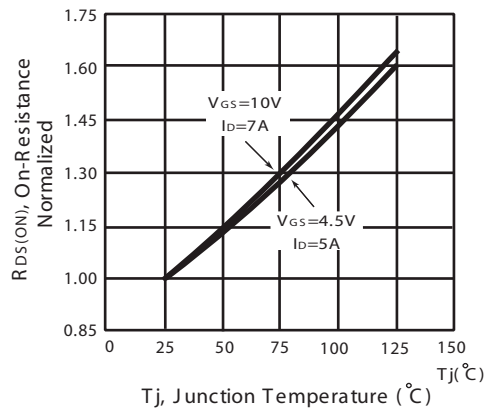


Figure 4. On-Resistance Variation with Drain Current and Temperature