



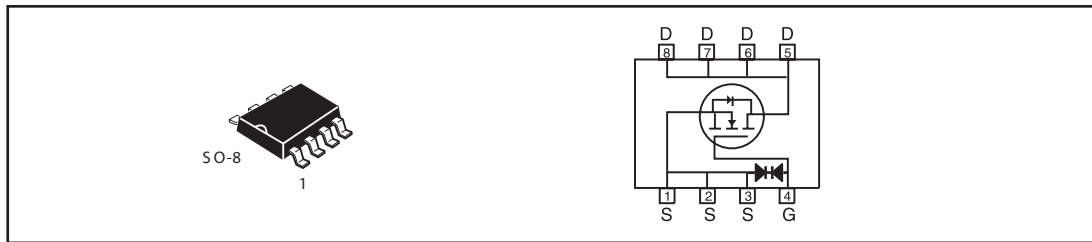
STM4472

N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V _{DS}	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		1.8		nC
Gate-Drain Charge	Q _{gd}		V _{GS} = 4.5V		2.4	

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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.

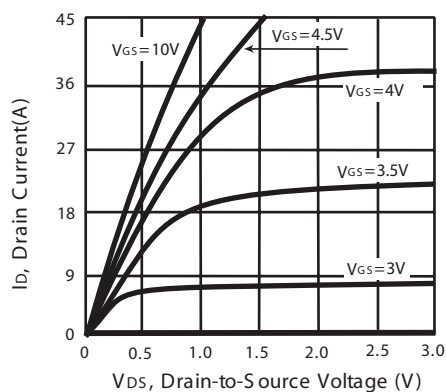


Figure 1. Output Characteristics

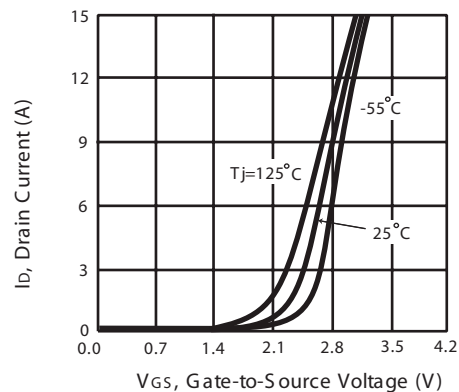


Figure 2. Transfer Characteristics

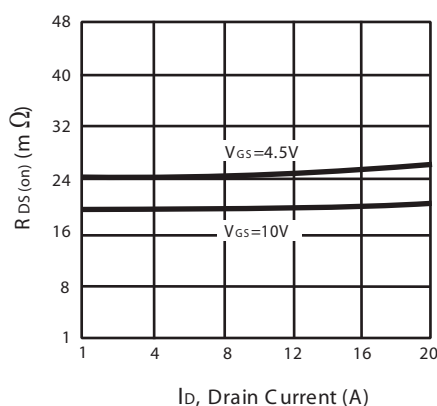


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

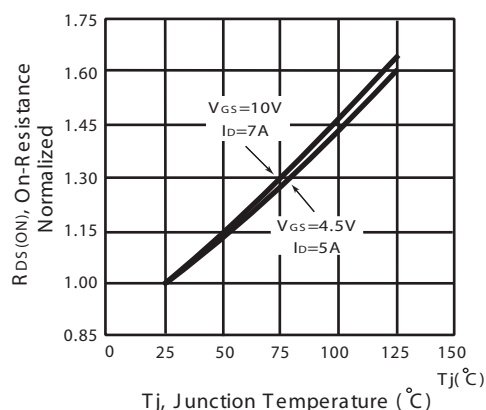


Figure 4. On-Resistance Variation with Drain Current and Temperature

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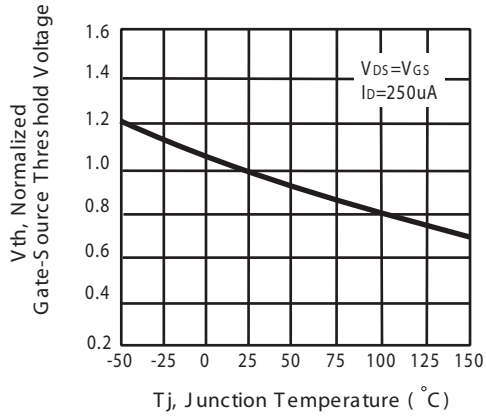


Figure 5. Gate Threshold Variation with Temperature

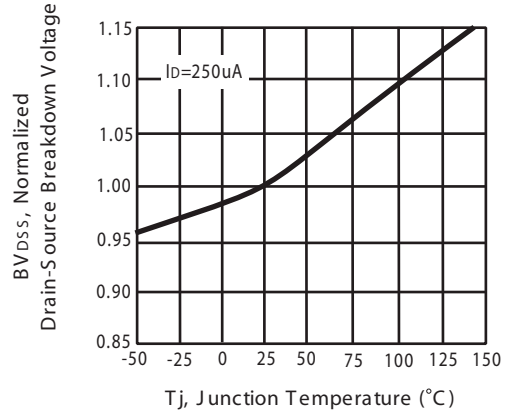


Figure 6. Breakdown Voltage Variation with Temperature

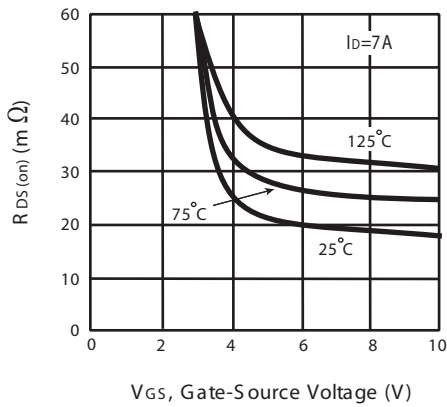


Figure 7. On-Resistance vs. Gate-Source Voltage

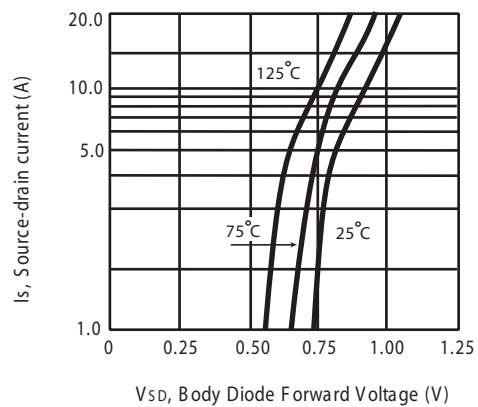


Figure 8. Body Diode Forward Voltage Variation with Source Current

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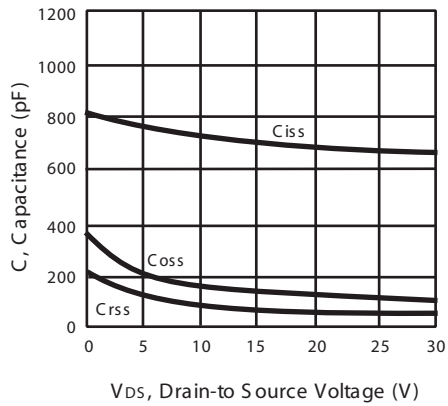


Figure 9. Capacitance

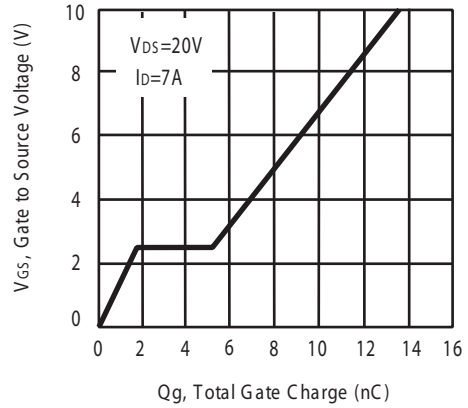


Figure 10. Gate Charge

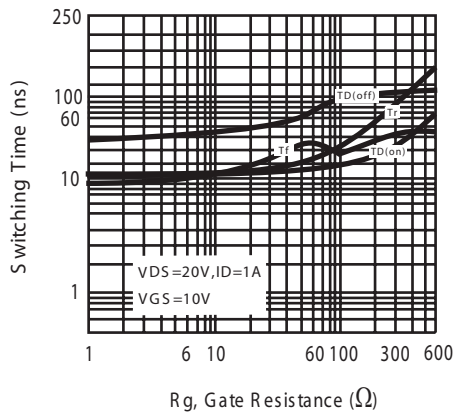


Figure 11. switching characteristics

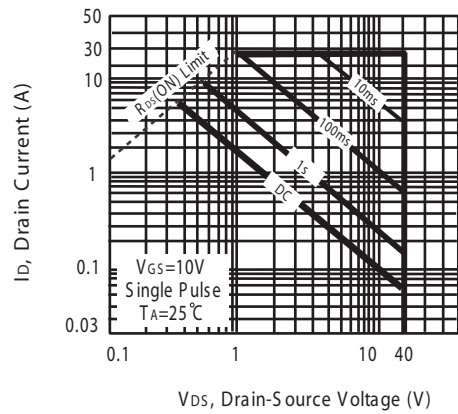
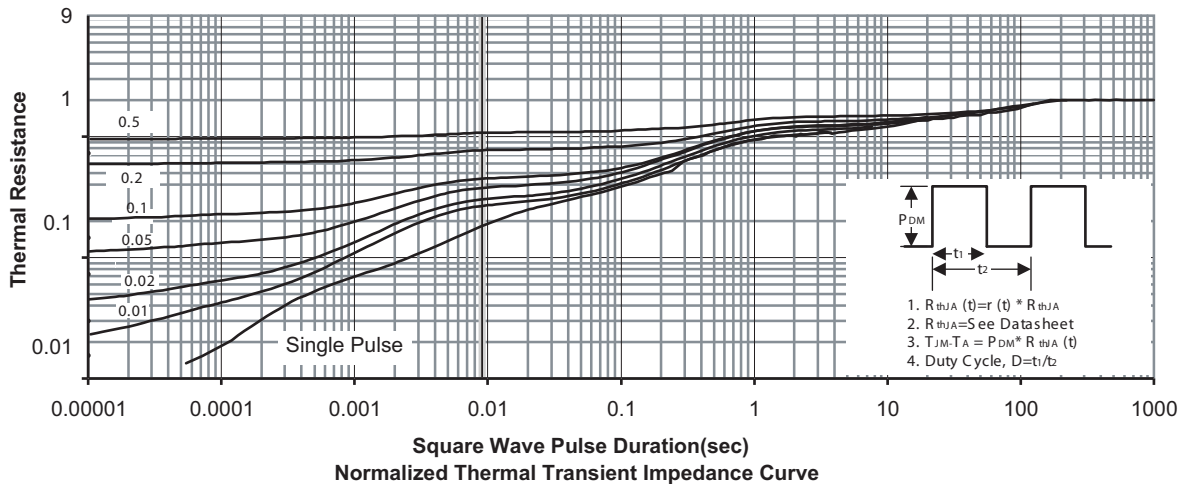


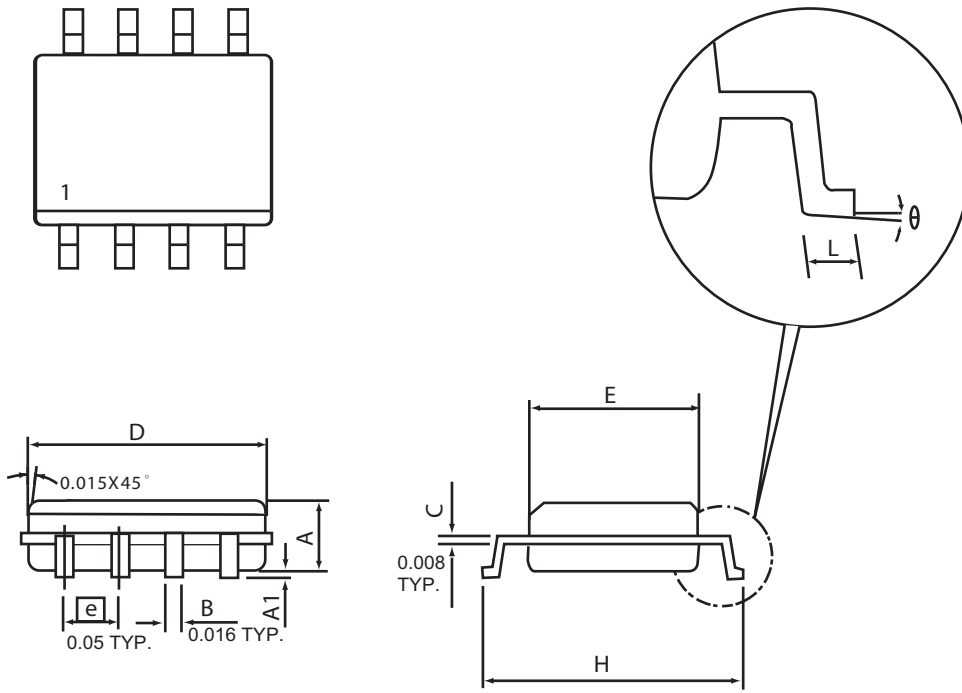
Figure 12. Maximum Safe Operating Area



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PACKAGE OUTLINE DIMENSIONS

SO-8

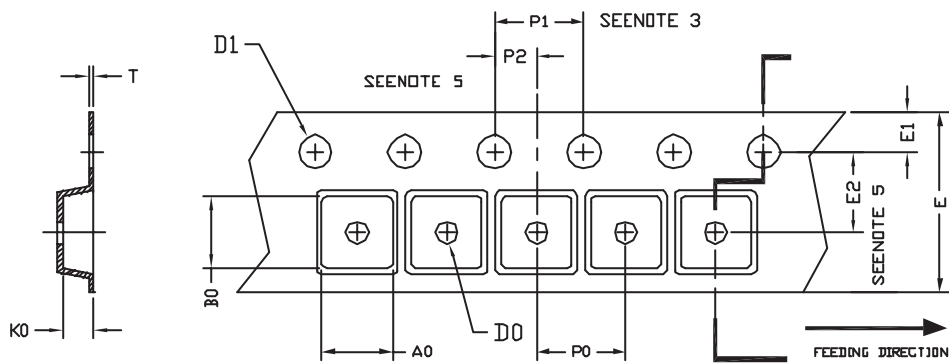


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
H	5.79	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
θ	0°	8°	0°	8°

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SO-8 Tape and Reel Data

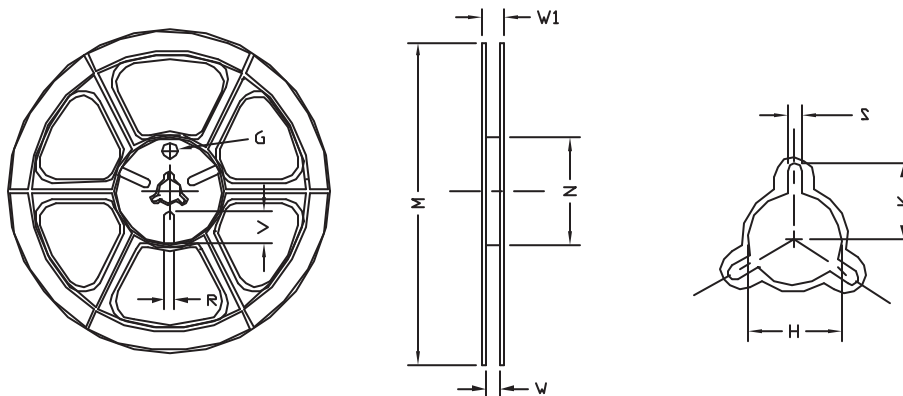
SO-8 Carrier Tape



unit:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOP 8N 150mil	6.40	5.20	2.10	ϕ 1.5 (MIN)	ϕ 1.5 + 0.1 - 0.0	12.0 \pm 0.3	1.75	5.5 \pm 0.05	8.0	4.0	2.0 \pm 0.05	0.3 \pm 0.05

SO-8 Reel



UNIT:mm

TAPE SIZE	REEL SIZE	M	N	W	W1	H	K	S	G	R	V
12 mm	ϕ 330	330 \pm 1	62 \pm 1.5	12.4 + 0.2	16.8 - 0.4	ϕ 12.75 + 0.15	---	2.0 \pm 0.15	---	---	---