



STM4639

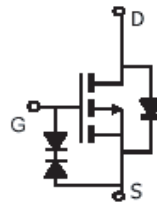
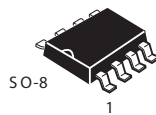
P-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V _{DSS}	I _D	R _{DS(ON)} (m Ω) Max
-35	-14A	8.5 @ V _{GS} = -10V
		13 @ V _{GS} = -4.0V

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}	-35	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous -Pulsed ^b	I _D	-14	A
	I _{DM}	-56	A
Drain-Source Diode Forward Current	I _S	-1.7	A
Maximum Power Dissipation	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	R θ JA	50	°C/W
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STM4639

ELECTRICAL CHARACTERISTICS (T_A =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	-35			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-28V, 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	-0.8		-2.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = -10V, I _D =-14A			8.5	m-ohm
		V _{GS} = -4.0V, I _D = -10A			13	m-ohm
On-State Drain Current	I _{D(ON)}	V _{DS} = -5V, V _{GS} = -10V	-50			A
Forward Transconductance	g _{FS}	V _{DS} = -10V, I _D =-14A		32		S
DYNAMIC CHARACTERISTICS ^c						
Input Capacitance	C _{ISS}	V _{DS} =-15V, V _{GS} = 0V f =1.0MHz		4094		pF
Output Capacitance	C _{OSS}			641		pF
Reverse Transfer Capacitance	C _{RSS}			351		pF
SWITCHING CHARACTERISTICS ^c						
Turn-On Delay Time	t _{D(ON)}	V _D = -15V, I _D = -14A, V _{GEN} = - 10V, R _{GEN} = 3 ohm		24		ns
Rise Time	t _r			68		ns
Turn-Off Delay Time	t _{D(OFF)}			484		ns
Fall Time	t _f			188		ns
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-14A,V _{GS} =-10V		95		nC
		V _{DS} =-15V, I _D =-14A,V _{GS} =-4.0V		40		nC
Gate-Source Charge	Q _{gs}	V _{DS} =-15V, I _D = -14A, V _{GS} =-10V		6		nC
Gate-Drain Charge	Q _{gd}			23		nC

STM4639

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS ^c						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = -1.7A		-0.7	-1.2	V
Maximum Body-Diode Continuous Current	I _S	V _{GS} = 0V			-25	A

Notes

- a.Surface Mounted on FR4 Board, t ≤ 10sec.
- b.Pulse Test:Pulse Width ≤ 300us, Duty Cycle ≤ 2%.
- c.Guaranteed by design, not subject to production testing.

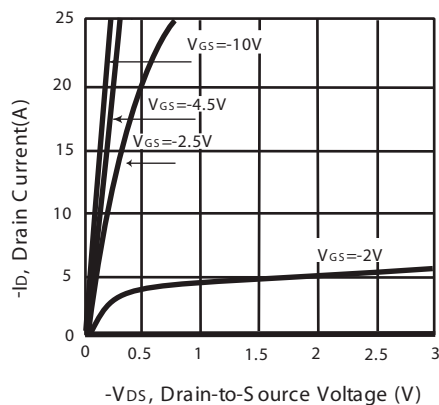


Figure 1. Output Characteristics

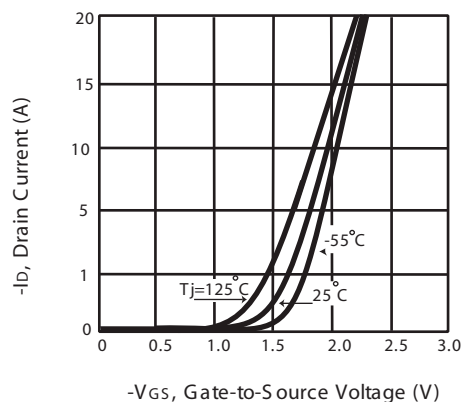


Figure 2. Transfer Characteristics

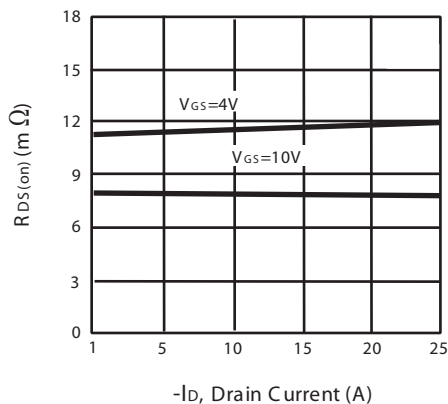


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

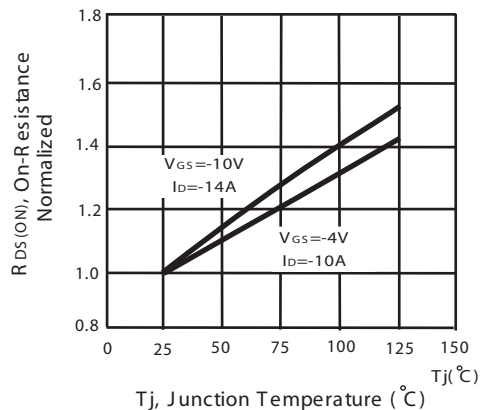


Figure 4. On-Resistance Variation with Drain Current and Temperature

STM4639

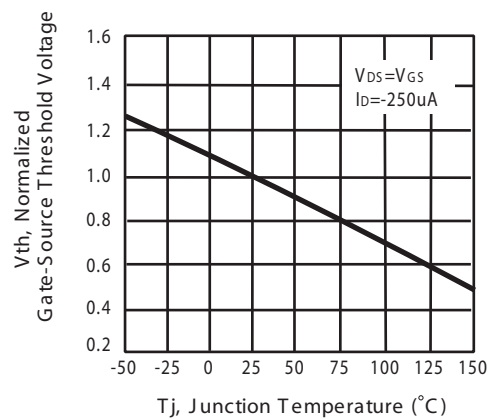


Figure 5. Gate Threshold Variation with Temperature

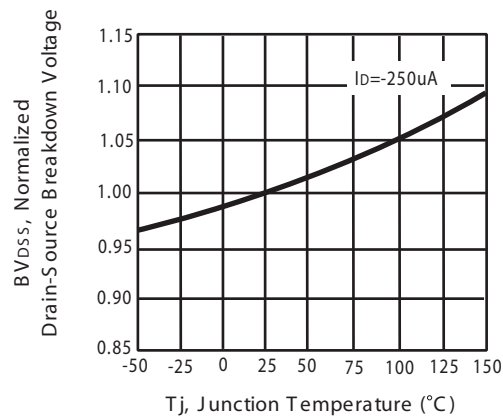


Figure 6. Breakdown Voltage Variation with Temperature

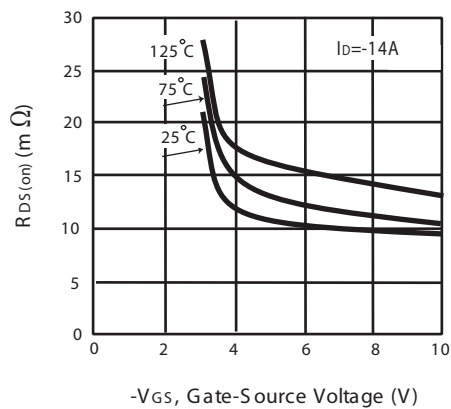


Figure 7. On-Resistance vs. Gate-Source Voltage

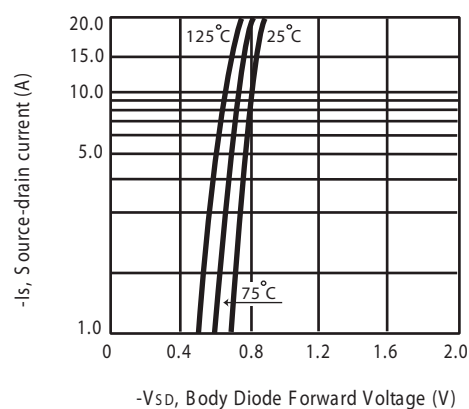


Figure 8. Body Diode Forward Voltage Variation with Source Current

STM4639

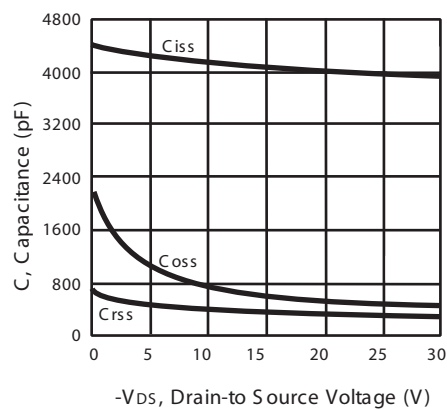


Figure 9. Capacitance

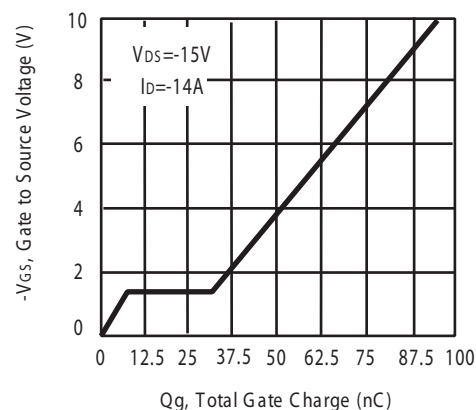


Figure 10. Gate Charge

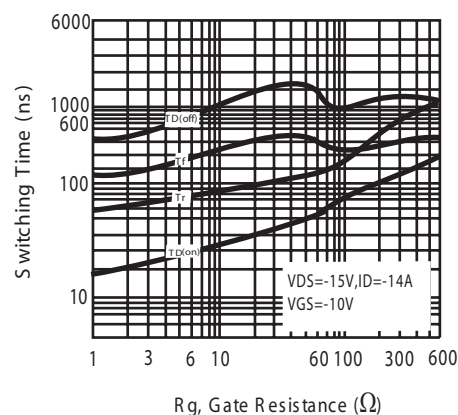


Figure 11. switching characteristics

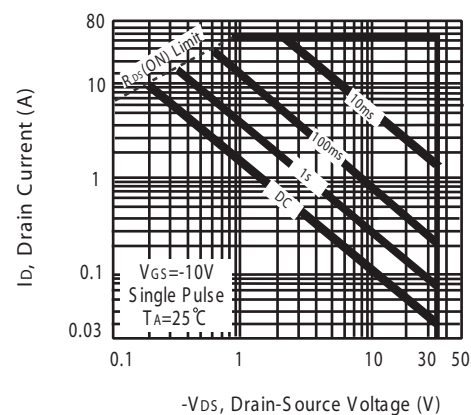


Figure 12. Maximum Safe Operating Area

STM4639

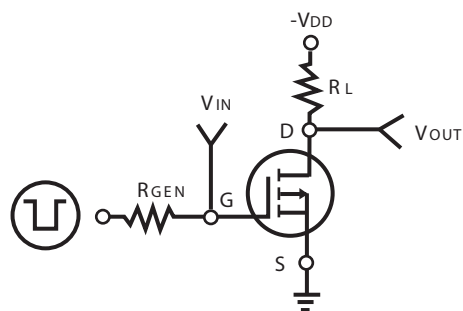


Figure 11. Switching Test Circuit

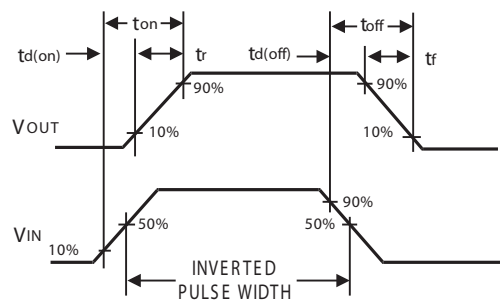


Figure 12. Switching Waveforms

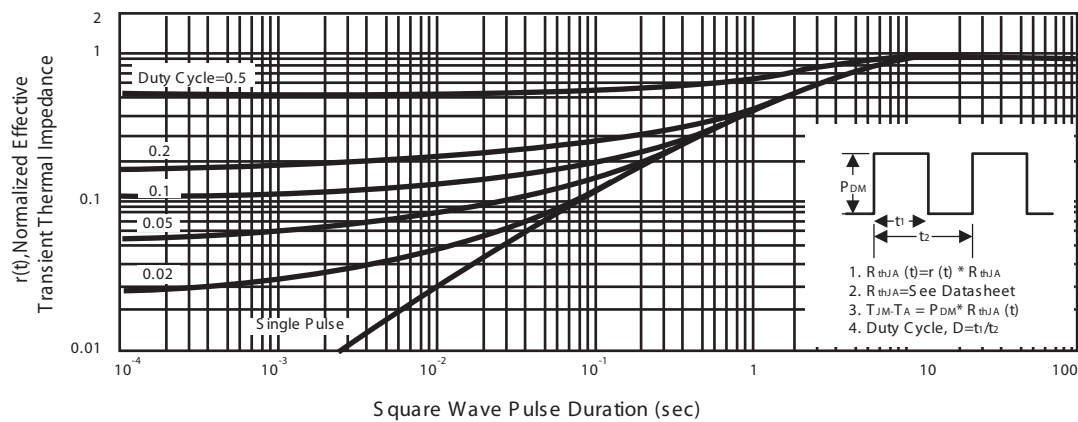
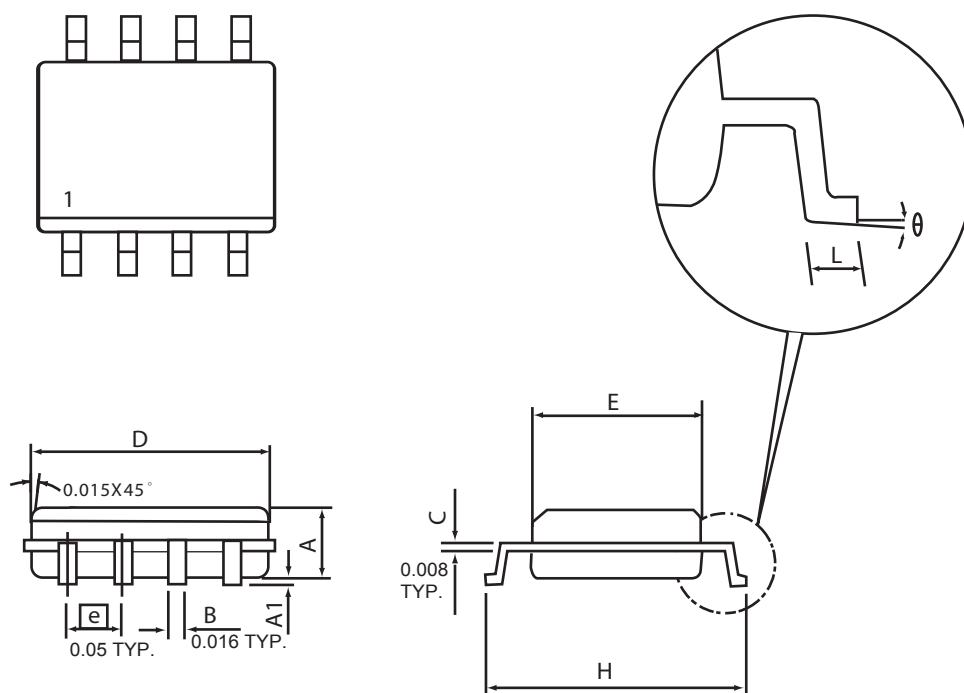


Figure 13. Normalized Thermal Transient Impedance Curve

STM4639

PACKAGE OUTLINE DIMENSIONS

SO-8

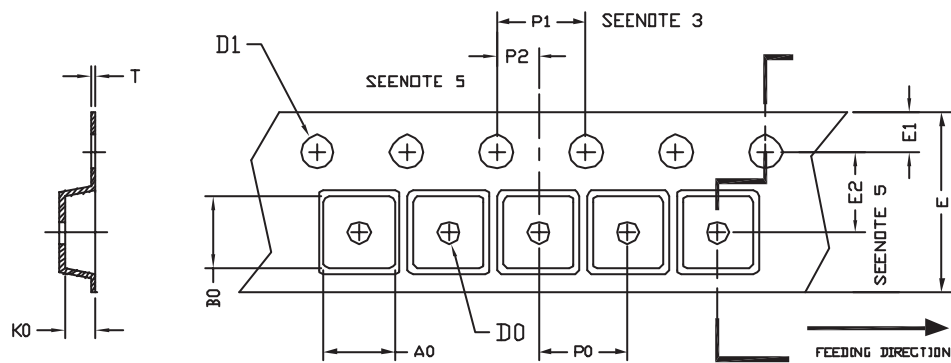


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
H	5.79	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
θ	0°	8°	0°	8°

STM4639

SO-8 Tape and Reel Data

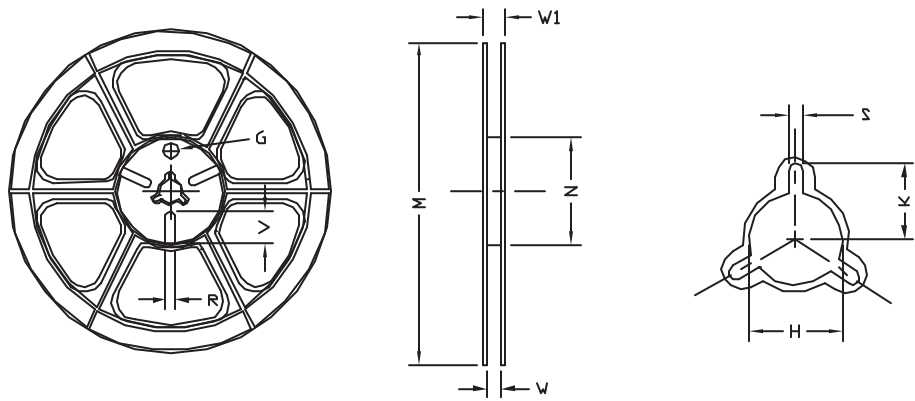
SO-8 Carrier Tape



unit:mm

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

SO-8 Reel



UNIT:mm

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