FMOSTHT03P10-H

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-3.0A -100V P-Channel Trench Enhancement Mode Power MOSFET

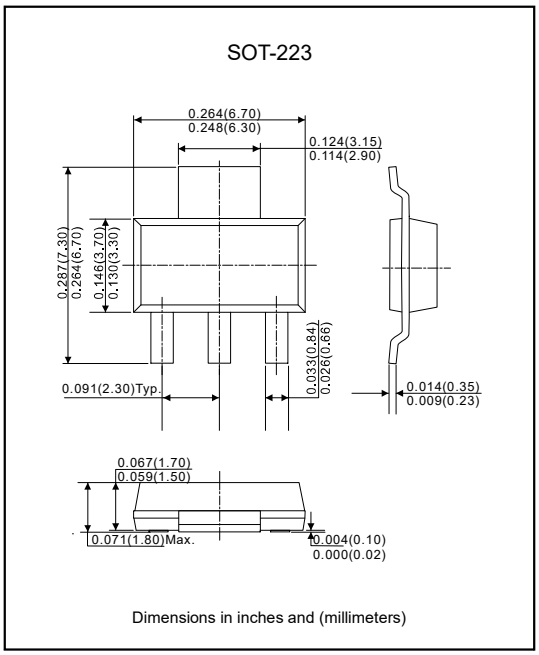
Features

- $-V_{DS}$= 100V, $-I_D$= 3A .
- $R_{DS(ON)}$ ≤ 190mΩ, @ $-V_{GS}$=10V, $-I_D$=3A.
- $R_{DS(ON)}$ ≤ 210mΩ, @ $-V_{GS}$=4.5V, $-I_D$=1A.
- High density cell design for ultra-low on-resistance.
- Fully characterized avalanche voltage and current.
- Excellent package for good heat dissipation.
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-223
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Mounting Position : Any.

Package outline



Maximum ratings (At T_A=25°C unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain to source voltage	$-V_{DS}$	100	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current	$-I_D$	3	A
Pulsed drain current (Note 1)	$-I_{DM}$	10	A
Power dissipation (Note 3)	P_D	3.1	W
Thermal resistance, junction to ambient (Note 3)	$R_{\theta JA}$	40	°C/W
Junction temperature	T_J	+150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

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Electrical characteristics (At T_A=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off parameters						
Drain-source breakdown voltage	$-BV_{DSS}$	$-I_D$=250μA, V_{GS}=0V	100			V
Drain-source leakage current	$-I_{DSS}$	$-V_{DS}$=100V, V_{GS}=0V			1	μA
		$-V_{DS}$=100V, V_{GS}=0V, T_J=125ºC			1	mA
Gate-source leakage current	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	1.0	1.75	3.0	V
Static drain-source on-state resistance (Note3)	$R_{DS(ON)}$	$-V_{GS}$=10V, $-I_D$=3A		153	190	mΩ
		$-V_{GS}$=4.5V, $-I_D$=1A		166	210	
Forward transconductance	g_{FS}	$-V_{DS}$=5V, $-I_D$=3A		7		S
Dynamic parameters (Note 4)						
Input capacitance	C_{iss}	V_{GS}=0V, $-V_{DS}$=25V, f=1.0MHZ		1419	2500	pF
Out capacitance	C_{oss}			89	170	
Reverse transfer capacitance	C_{rss}			45	90	
Gate resistance	R_G	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		16		Ω
Switching parameters (Note 4)						
Total gate charge	Q_g	$-V_{GS}$=4.5V, $-V_{DS}$=25V, $-I_D$=2.6A (Note 1,2)		20	40	nC
Gate to source charge	Q_{gs}			3.5	7.0	
Gate to drain charge	Q_{gd}			4.6	9.0	
Turn-on delay time	$t_{d(on)}$	$-V_{DS}$=50V, $-V_{GS}$=10V, $-I_D$=2.6A, R_{GEN}=25Ω (Note 1,2)		18	36	nS
Rise time	t_r			8	16	
Turn-off delay time	$t_{d(off)}$			100	200	
Fall time	t_f			30	60	
Source-drain diode ratings and characteristics						
Body Diode Voltage (Note 3)	$-V_{SD}$	$-I_S$=1A, V_{GS}=0V		0.75	1.2	V
Continuous drain-source diode forward current	$-I_S$				3	A
Pulsed drain-source diode forward current (Note 1)	$-I_{SM}$				10	A

Note : 1. Pulse width ≤ 300μs, duty cycle ≤2%.

2. Essentially independent of operating temperature typical characteristics.

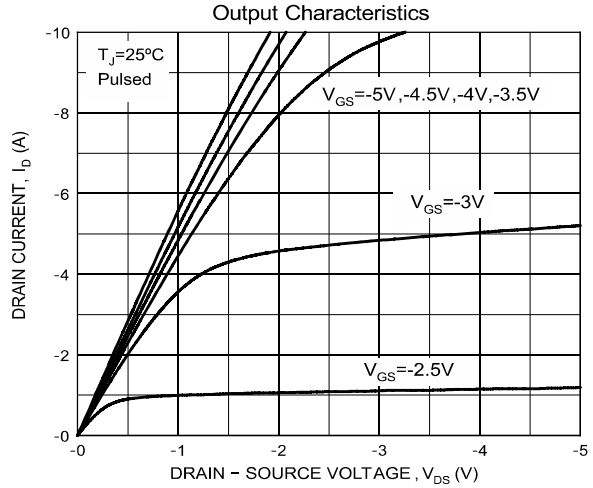
3. $R_{\theta JA}$ is the sum of the junction to case and case to ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 $inch^2$ with 2oz. square pad of copper.

4. Guaranteed by design, not subject to production testing.

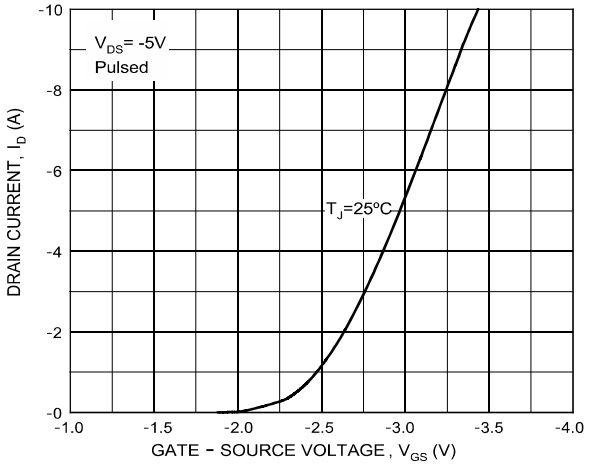
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Rating and characteristic curve

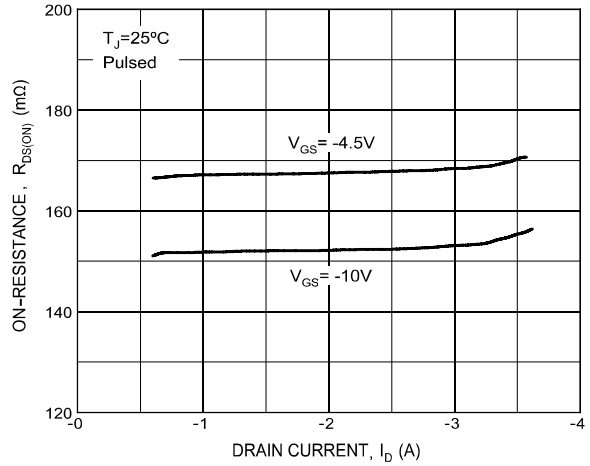
Output Characteristics



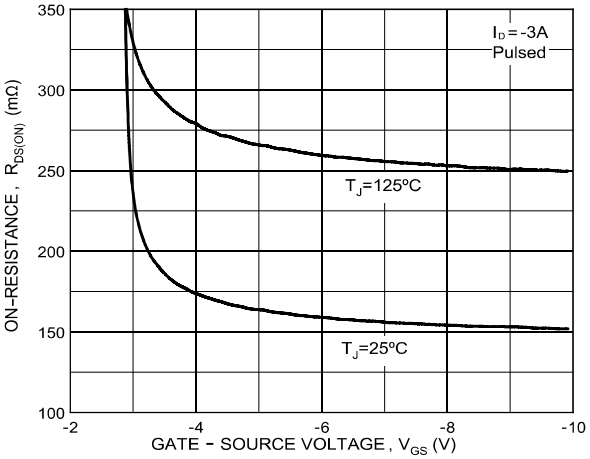
Transfer Characteristics



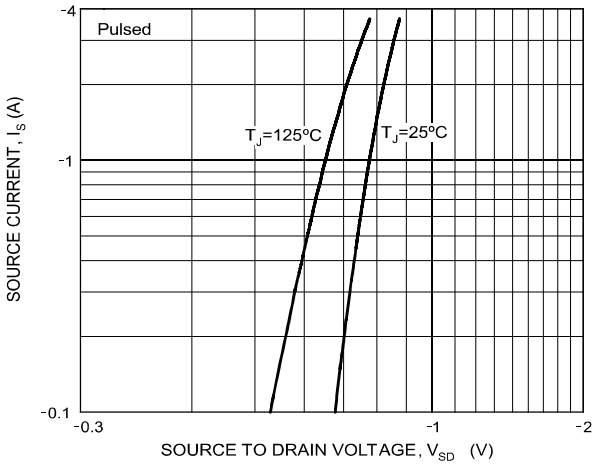
On-resistance vs. Drain current



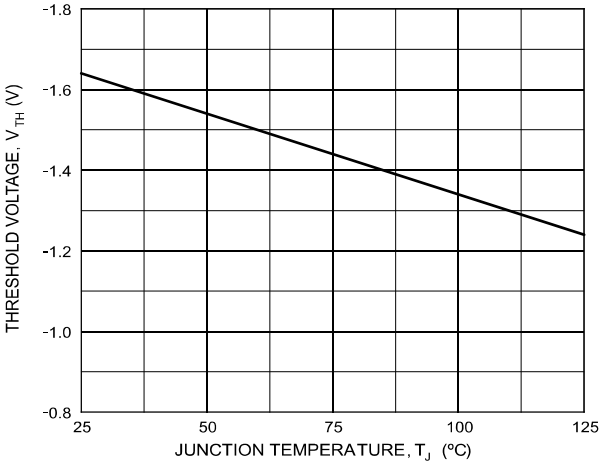
On-resistance vs. Gate-source voltage



Source current vs. Source-Drain voltage

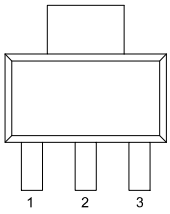
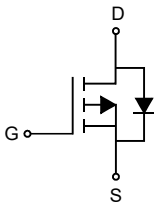


Threshold voltage



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Pinning information

Pin	Simplified outline	Symbol
Pin 1 Gate Pin 2 Drain Pin 3 Source		

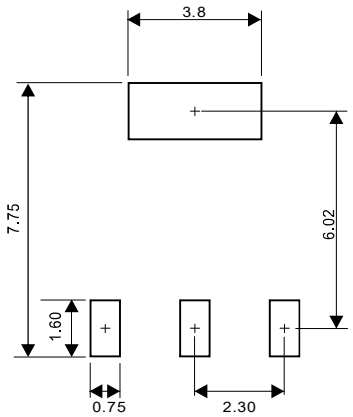
Marking

Type number	Marking code
FMOSTHT03P10-H	T03P10 XX

XX : Assy. code

Suggested solder pad layout

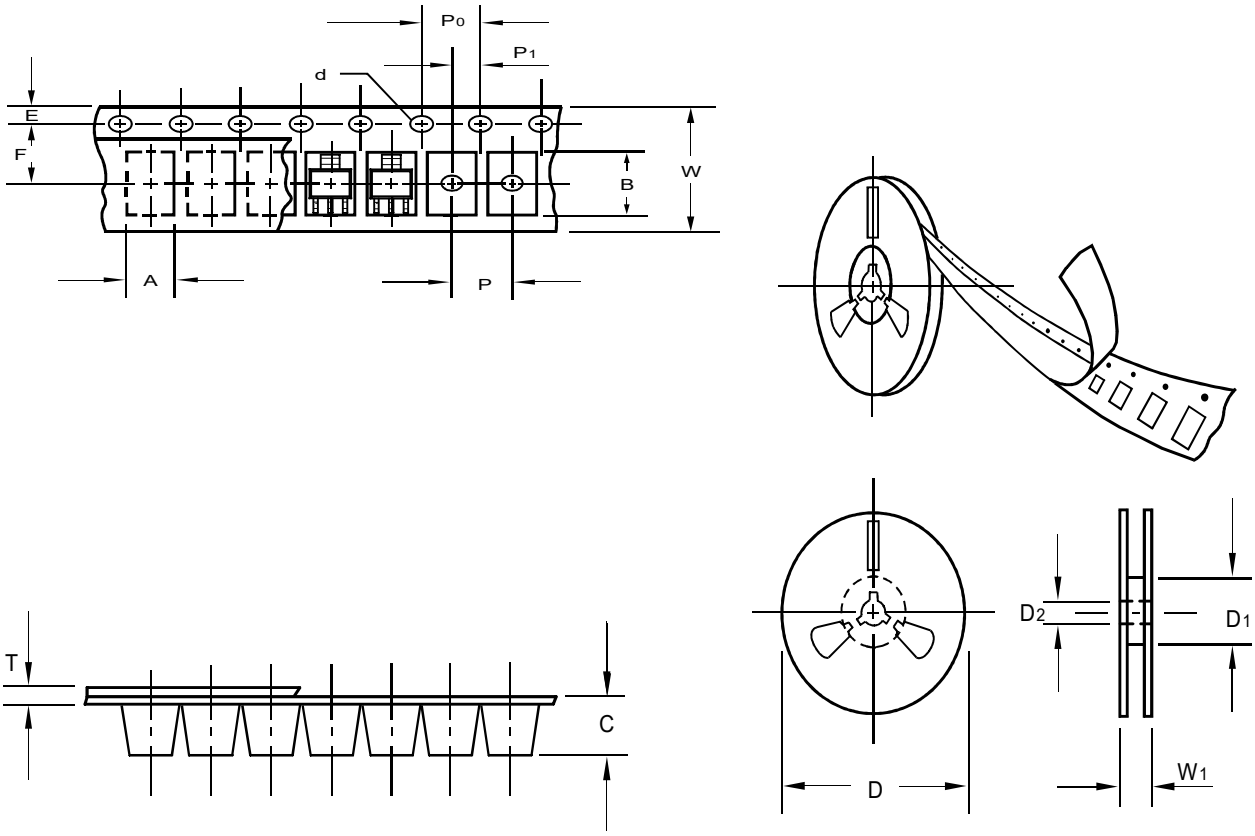
SOT-223



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.050mm.
3.The pad layout is for reference purposes only

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-223
Carrier width	A	0.3	6.76
Carrier length	B	0.3	7.33
Carrier depth	C	0.3	1.88
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D_1	min	100.00
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.25
Tape width	W	0.3	12.00
Reel width	W_1	3.0	17.60

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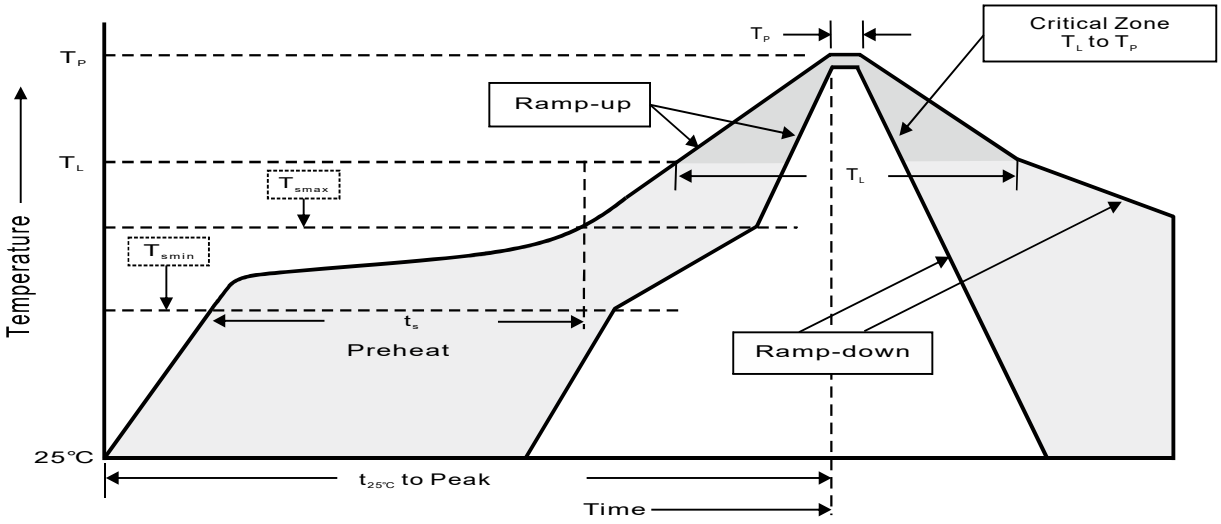
Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
SOT-223	13"	2,500	8.0	5,000	335*335*38	330	350*330*360	40,000

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature = 5°C ~ 40°C Humidity = 55%, ±25%

2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile feature	Soldering condition
Average ramp-up rate (T_L to T_P)	< 3 ℃/sec
Preheat - Temperature Min (T_{smin}) - Temperature Max (T_{smax}) - Time (Min to Max) (t_s)	 150℃ 200℃ 60 ~ 120 sec
T_{smax} to T_L - Ramp-up rate	 < 3 ℃/sec
Time maintained above : - Temperature (T_L) - Time (T_L)	 217℃ 60 ~ 260 sec
Peak temperature (T_P)	255 ℃ -0/+5℃
Time with 5℃ of actual peak temperature (T_P)	10 ~30 sec
Ramp-down rate	< 6 ℃/sec
Time 25℃ to peak temperature	< 6 minutes