

FMOSGTAC35N10-H

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FMOSGTAC35N10-H

35A 100V N-Channel Shield Gate Trench
Enhancement Mode Power MOSFET

Features

- $V_{DS} = 100V$, $I_D = 35A$.
- $R_{DS(ON)} \leq 31m\Omega$ @ $V_{GS} = 10V$, $I_D = 10A$.
- $R_{DS(ON)} \leq 40m\Omega$ @ $V_{GS} = 4.5V$, $I_D = 6A$.
- Excellent on-resistance and low gate charge.
- 100% UIS tested and 100% ΔV_{DS} tested.
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

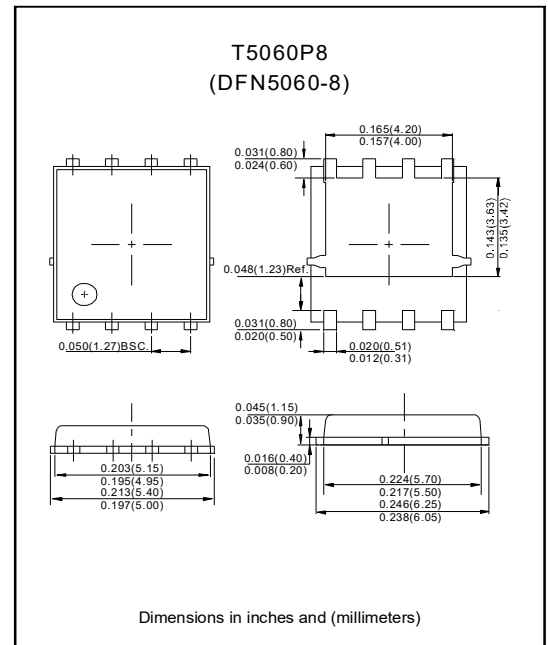
Applications

- Load switch.
- PWM application.
- Power management.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case : Molded plastic, T5060P8 (DFN5060-8).
- Weight : Approximated 105mg.

Package outline

Maximum ratings (At $T_c = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-source voltage	V _{DS}	100	V
Gate-source voltage	V _{GS}	±20	V
Continuous drain current (T _c =25°C) (T _c =100°C)	I _D	35	A
		22	
Pulsed drain current (Note 1)	I _{DM}	Refer to peak current capacity curve	A
Single pulse avalanche energy (Note 2)	E _{AS}	36	mJ
Power dissipation (T _c =25°C) (T _c =100°C)	P _D	69	W
		28	
Thermal resistance, junction to ambient (Note 3)	R _{θJA}	47	°C/W
Thermal resistance, junction to case	R _{θJC}	1.8	°C/W
Operating Junction temperature	T _J	+150	°C
Storage temperature range	T _{STG}	-55 to +150	°C

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Electrical characteristics (At $T_J=25^{\circ}\text{C}$ unless otherwise noted)

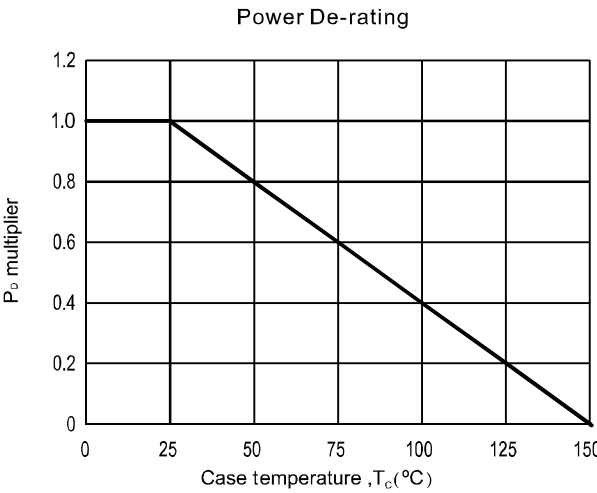
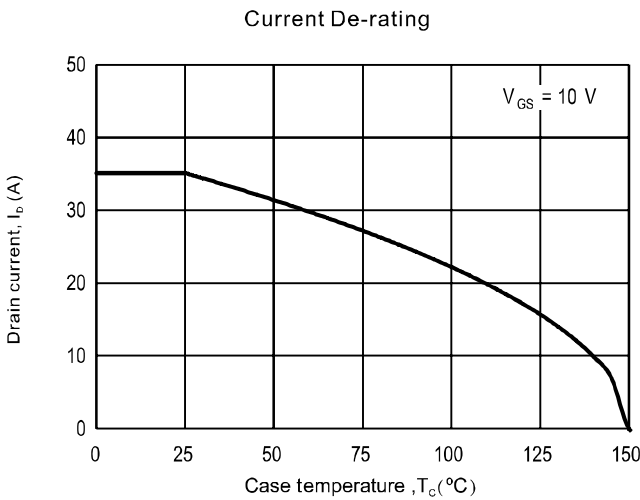
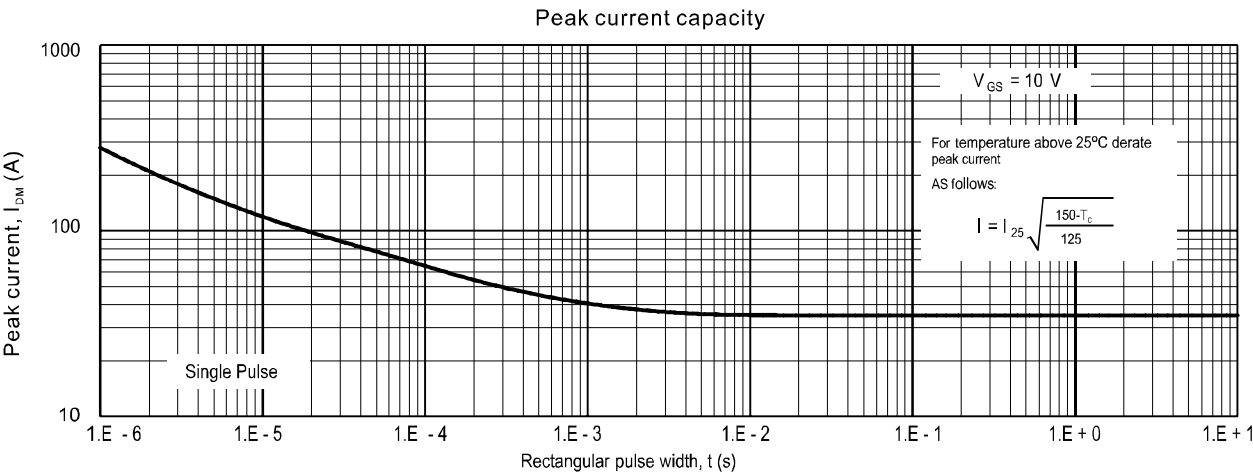
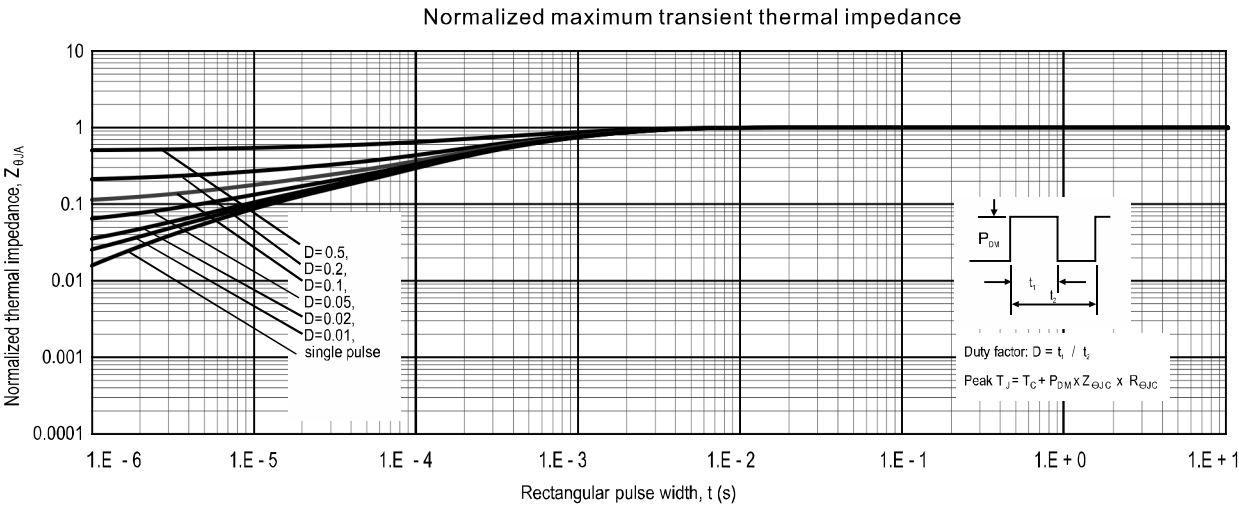
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	100			V
Drain-source leakage current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	μA
Gate-source leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
On characteristics						
Gate threshold voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250μA	1.3	1.8	2.4	V
Static drain-source on-resistance (Note4)	R _{DS(ON)}	V _{GS} =10V, I _D =10A		24	31	mΩ
		V _{GS} =4.5V, I _D =6A		31	40	
Dynamic parameters						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V, f=1.0MHz	367	513	693	pF
Out capacitance	C _{oss}		130	182	246	
Reverse transfer capacitance	C _{rss}		8	12	16	
Gate resistance	R _g	f=1.0MHz		1.2		Ω
Switching parameters						
Total gate charge	Q _g	V _{GS} =0 to 10V, V _{DS} =50V, I _D =10A		10		nC
Gate to source charge	Q _{gs}			2.1		
Gate to drain charge	Q _{gd}			2.3		
Turn-on delay time	t _{d(on)}	V _{DD} =50V, V _{GS} =10V, I _D =10A, R _{GEN} =3Ω		5.3		ns
Rise time	t _r			12		
Turn-off delay time	t _{d(off)}			13		
Fall time	t _f			3.1		
Source-drain diode ratings and characteristics						
Drain-source diode forward voltage	V _{SD}	I _S =10A, V _{GS} =0V			1.2	V
Maximum continuous body diode forward current	I _S				35	A
Maximum pulsed body diode forward current	I _{SM}				140	V
Body diode reverse recovery time	t _{rr}	I _F =10A, di/dt =100A/μs	20	27	37	ns
Body diode reverse recovery charge	Q _{rr}			20		nC

Notes : 1. Repetitive rating; pulse width limited by maximum junction temperature.

2. E_{AS} condition: starting $T_J=25^{\circ}\text{C}$, $V_{DS}=50\text{V}$, $V_{GS}=10\text{V}$, $R_G=25\Omega$, $L=3\text{mH}$, $I_{AS}=4.9\text{A}$, $V_{DD}=0\text{V}$, during time in avalanche.3. $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.4. Pulse test: width $\leq 300\mu\text{s}$, duty cycle $\leq 0.5\%$.

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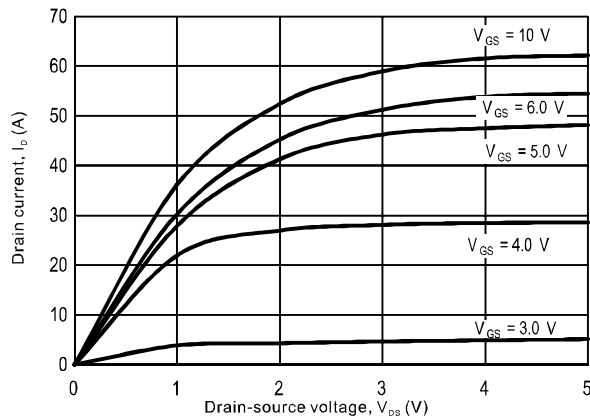
Rating and characteristic curves



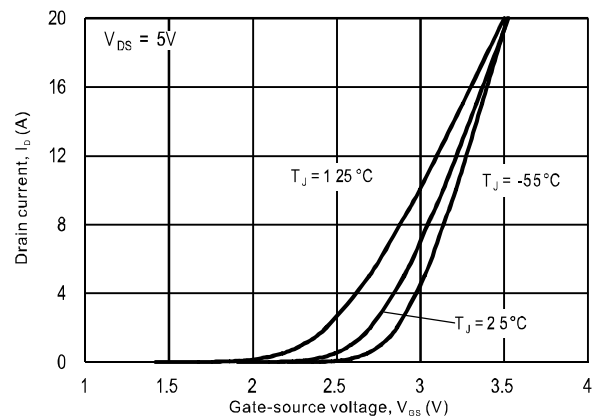
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Rating and characteristic curves

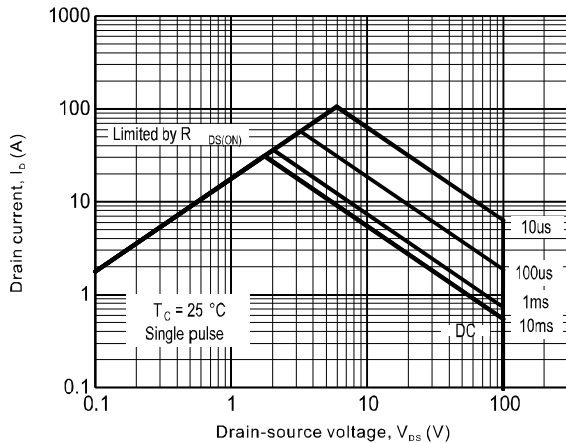
Output characteristics



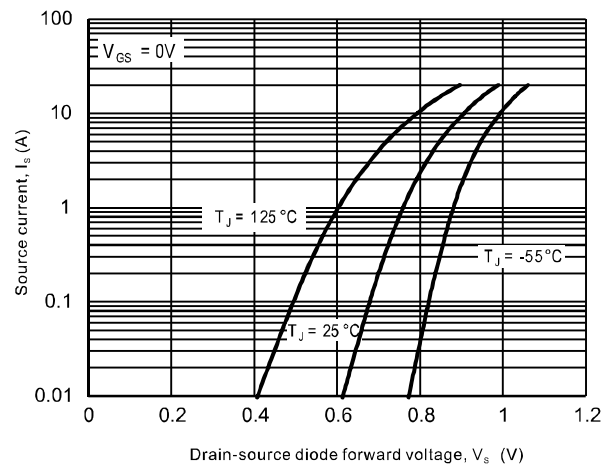
Typical transfer characteristics



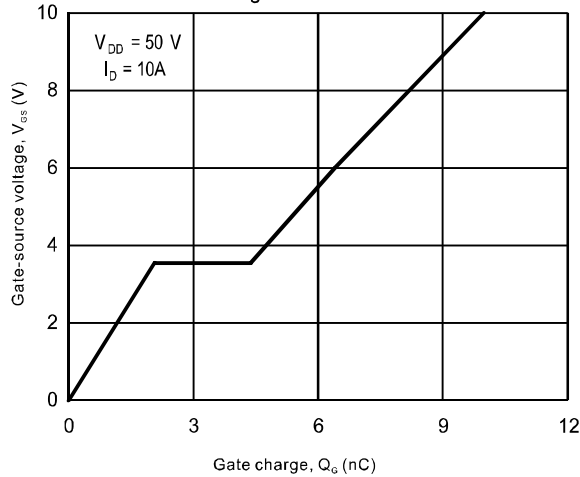
Maximum safe operating area



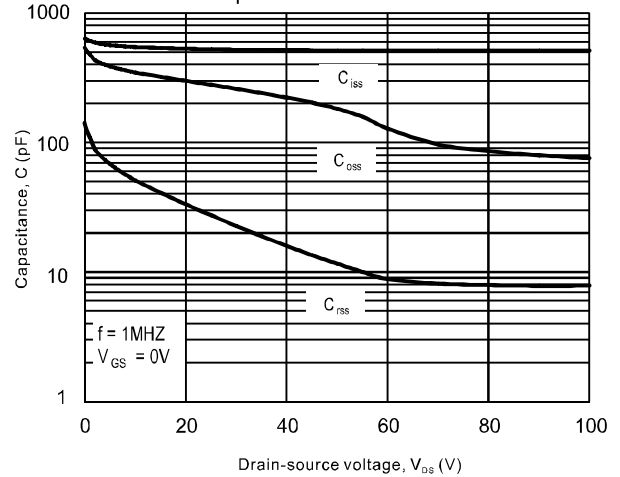
Body diode characteristics



Gate charge characteristics

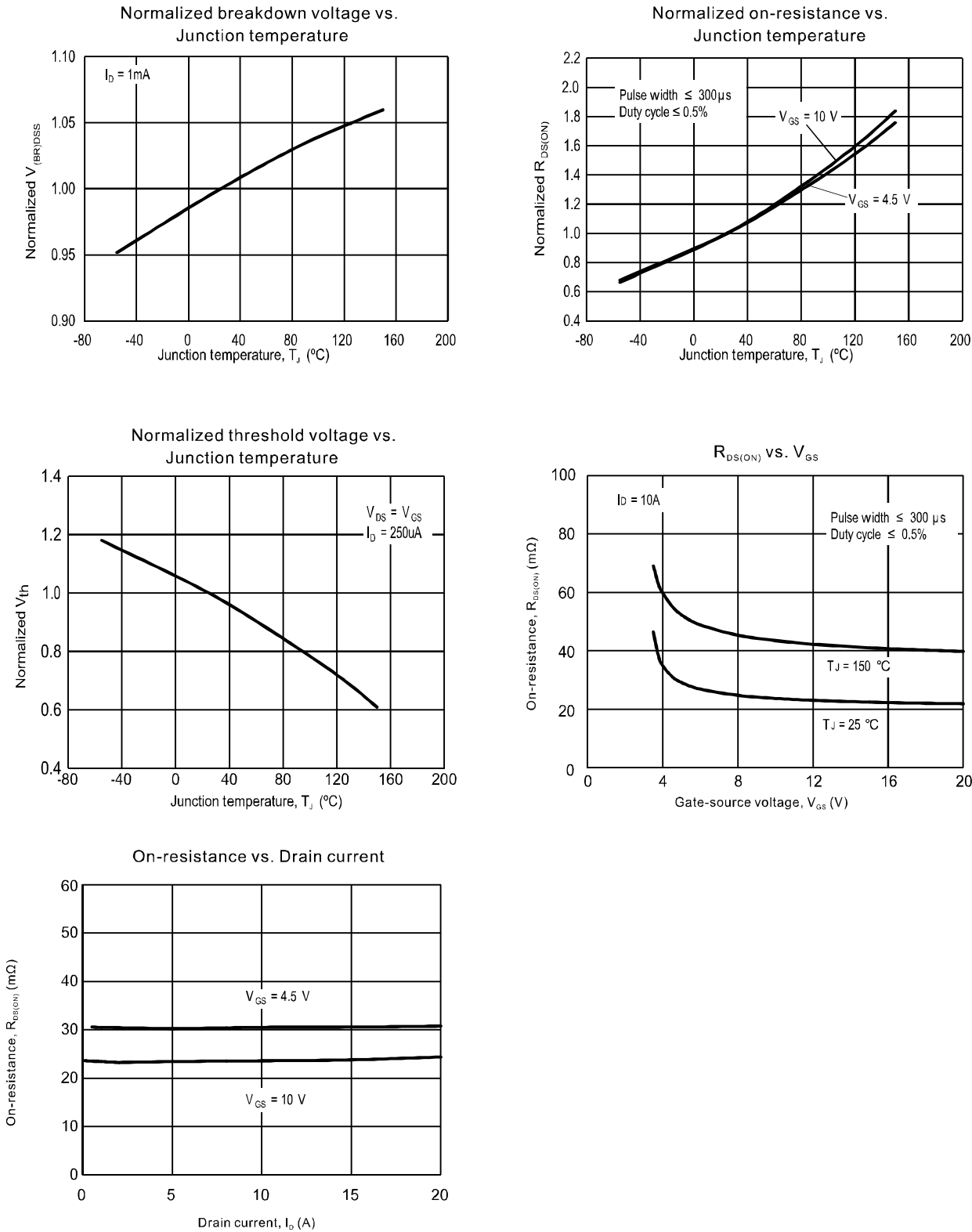


Capacitance characteristics



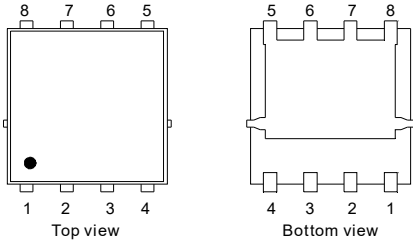
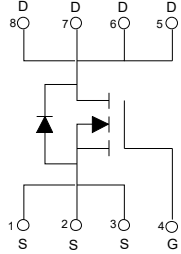
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Rating and characteristic curves



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Pinning information

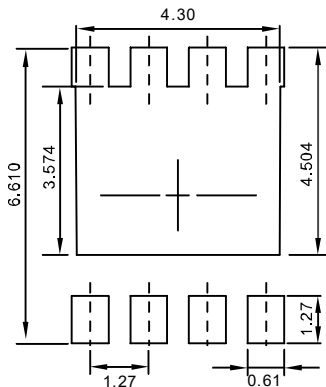
Pin	Simplified outline	Symbol
Pin 1, 2, 3 Source Pin 4 Gate Pin 5, 6, 7, 8 Drain		

Marking

Type number	Marking code
FMOSGTAC35N10-H	SL10380G YYWWA

*YYWW: Wafer lot code
YY: Year
WW: Week
A: Assy. code

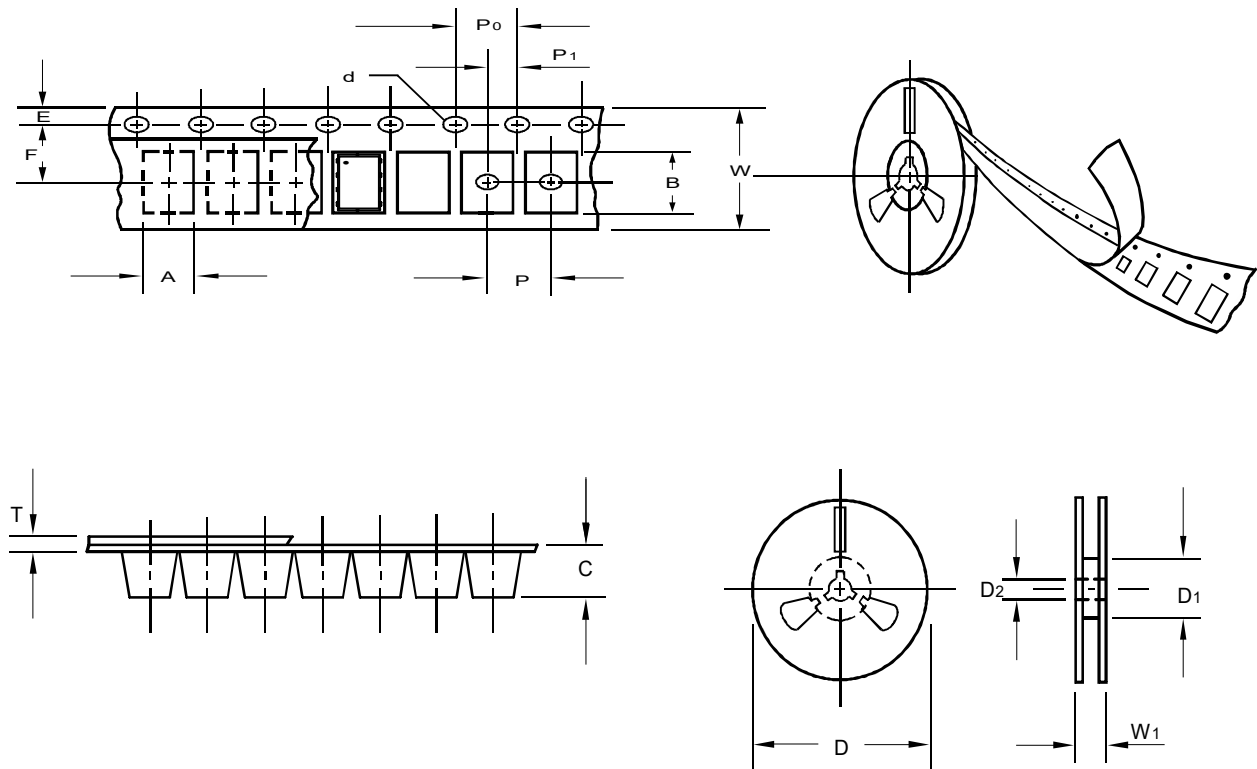
Suggested solder pad layout



Note:
1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.1 mm
3. The pad layout is for reference purposes only.

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Packing information



unit:mm

Item	Symbol	Tolerance	T5060P8
Carrier width	A	0.5	6.40
Carrier length	B	0.5	5.40
Carrier depth	C	0.5	1.25
Sprocket hole	d	0.5	1.55
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D ₁	min	98.00
7" Reel outside diameter	D	2.0	-
7" Reel inner diameter	D ₁	min	-
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	0.5	0.30
Tape width	W	0.5	12.00
Reel width	W ₁	5.0	18.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

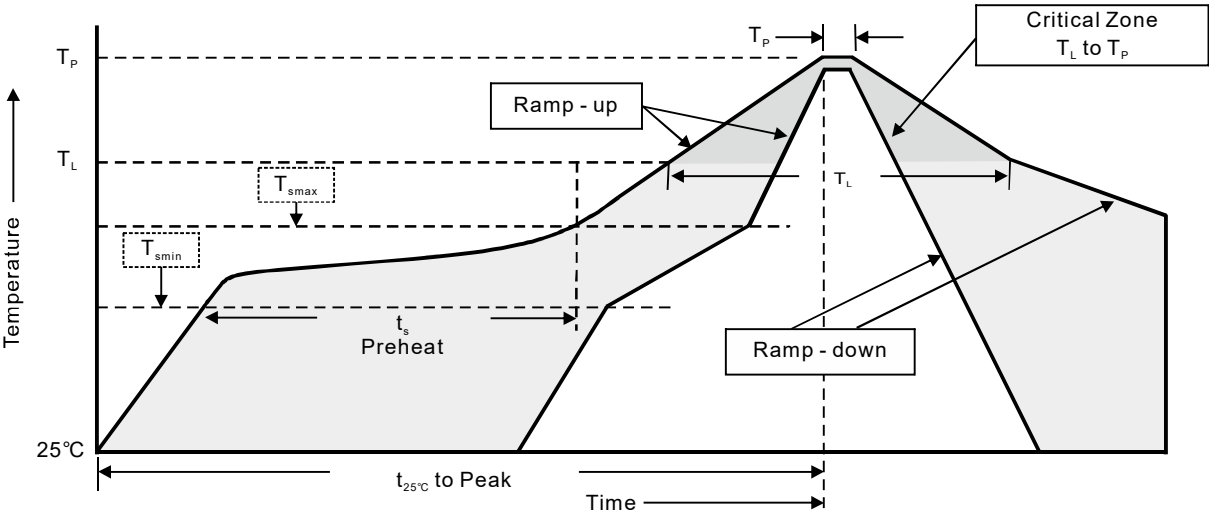
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Reel packing

Device	Outline	Device Package	Reel Size	Reel (pcs)
FMOSGTAC35N10-H	Taping	T5060P8	13 inch	5,000

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