

FMOSAC55N06

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	BV_{DSS}	$I_D=250\mu A$, $V_{GS}=0V$	60			V
Drain-source leakage current	I_{DSS}	$V_{DS}=48V$, $V_{GS}=0V$			1.0	μA
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 20V$, $V_{DS}=0V$			± 100	nA
On characteristics						
Gate threshold voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.0	2.0	3.0	V
Static drain-source on-resistance (Note 3)	$R_{DS(ON)}$	$V_{GS}=10V$, $I_D=20A$		7.5	10	m Ω
		$V_{GS}=4.5V$, $I_D=10A$		10	14	
Dynamic parameters						
Input capacitance	C_{iss}	$V_{GS}=0V$, $V_{DS}=30V$, $F_{req}=1.0MHz$		4605		pF
Out capacitance	C_{oss}			760		
Reverse transfer capacitance	C_{rss}			191		
Switching parameters						
Total gate charge	Q_g	$V_{GS}=10V$, $V_{DS}=30V$, $I_D=20A$		77		nC
Gate to source charge	Q_{gs}			9		
Gate to drain charge	Q_{gd}			23		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=30V$, $V_{GS}=10V$, $R_G=4.5\Omega$, $I_D=20A$		9.5		ns
Rise time	t_r			26		
Turn-off delay time	$t_{d(off)}$			29		
Fall time	t_f			19.5		
Source-drain diode ratings and characteristics						
Continuous drain to source forward current	I_S				54	A
Pulsed drain to source forward current	I_{SM}				220	A
Drain-source diode forward voltage	V_{SD}	$I_S=20A$, $V_{GS}=0V$			1.3	V
Body diode reverse recovery time	t_{rr}	$V_{GS}=0V$, $I_S=20A$, $dI/dt=100A/\mu s$		55		ns
Body diode reverse recovery charge	Q_{rr}			45		nC

Notes :

1. Repetitive rating : Pulse width limited by maximum junction temperature.
2. EAS condition : $T_J=25^\circ\text{C}$, $V_{DS}=30\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$, $R_g=25\Omega$, $I_{AS}=18\text{A}$.
3. Pulse test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 0.5\%$.

Rating and characteristic curves (FMOSAC55N06)

Figure1: Output Characteristics

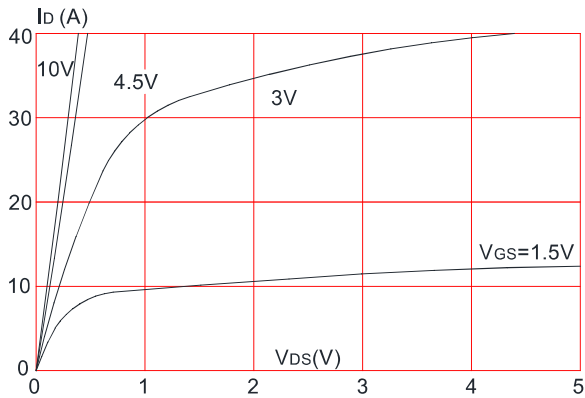


Figure 2: Typical Transfer Characteristics

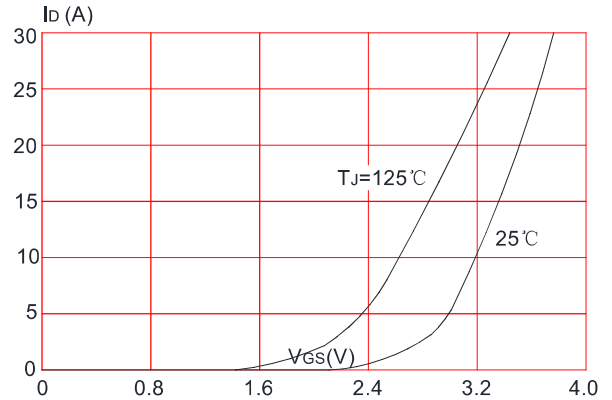


Figure 3: On-resistance vs. Drain Current

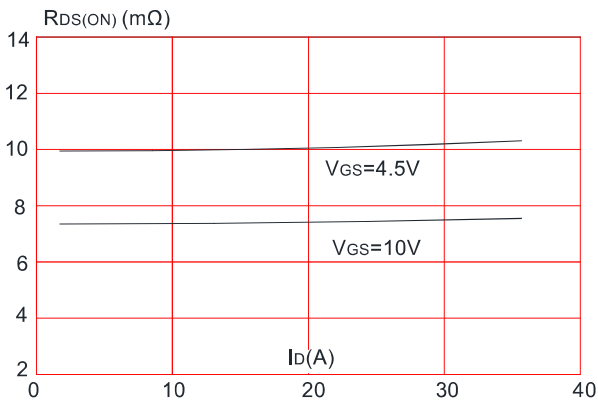


Figure 4: Body Diode Characteristics

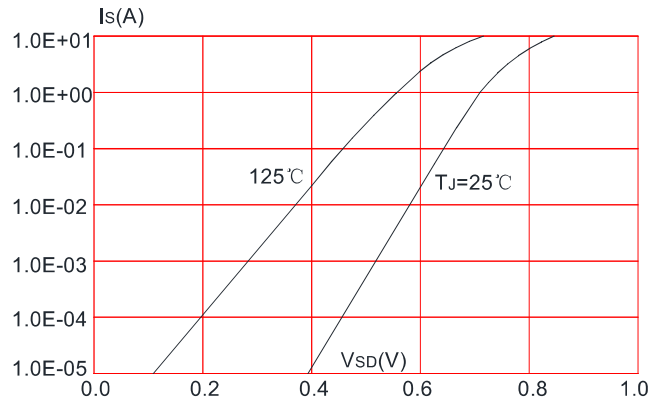


Figure 5: Gate Charge Characteristics

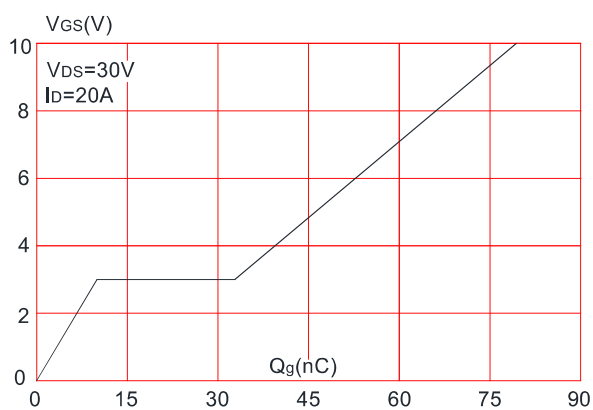
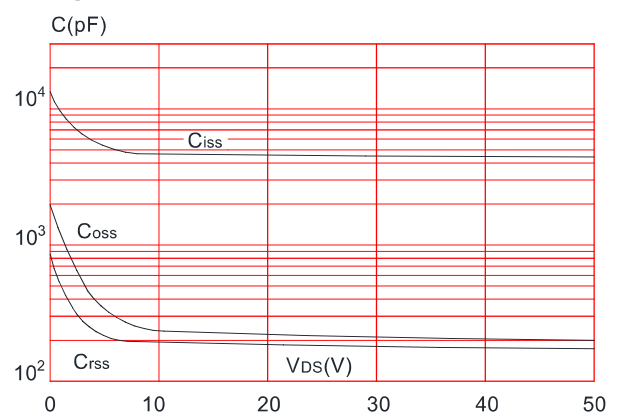


Figure 6: Capacitance Characteristics



Rating and characteristic curves (FMOSAC55N06)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

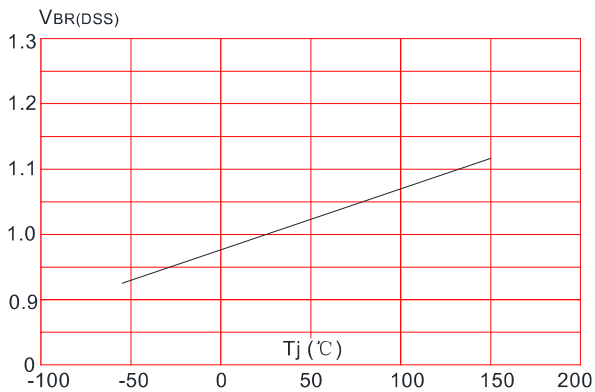


Figure 8: Normalized on Resistance vs. Junction Temperature

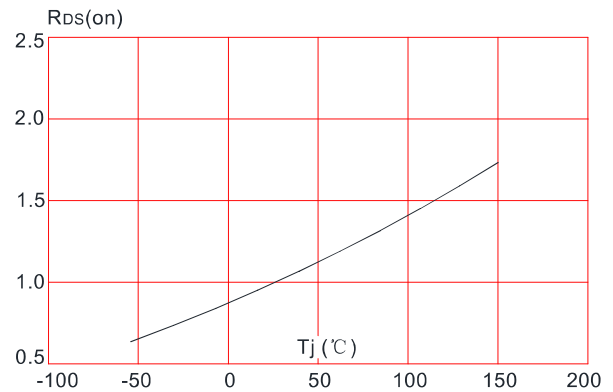


Figure 9: Maximum Safe Operating Area

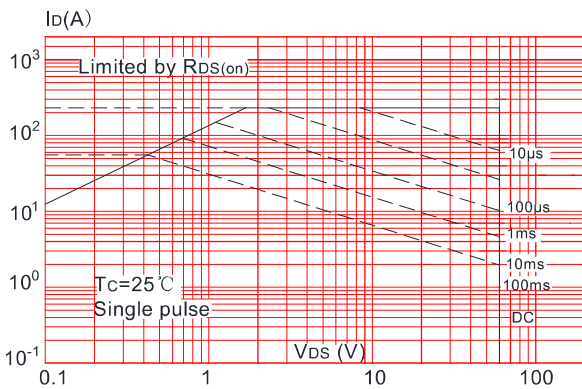


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

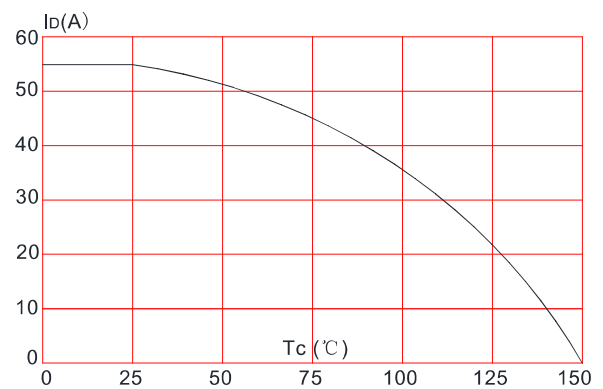
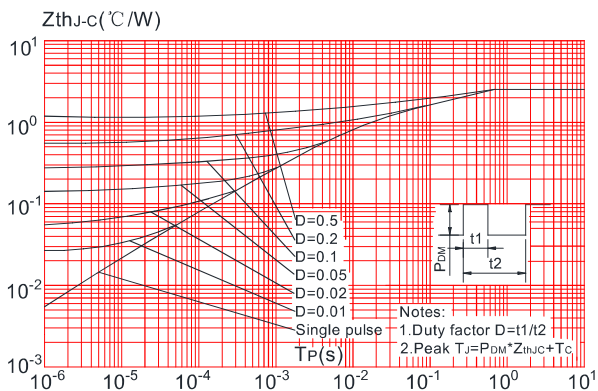
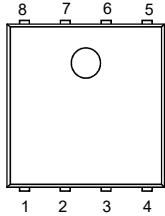
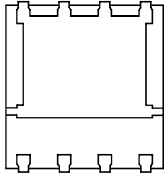
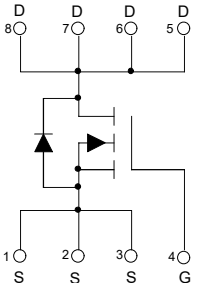


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

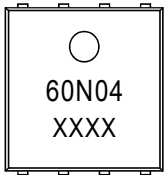


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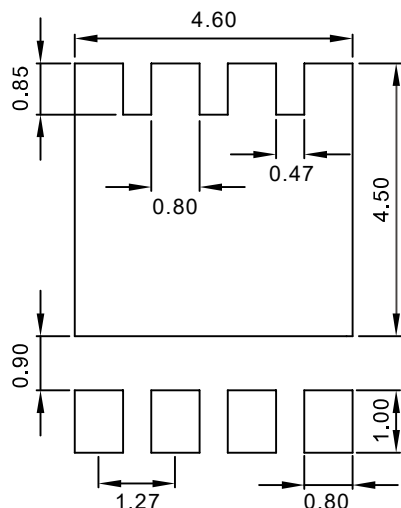
Pinning information

Pin	Simplified outline	Symbol
Pin1 Source Pin2 Source Pin3 Source Pin4 Gate Pin5 Drain Pin6 Drain Pin7 Drain Pin8 Drain	 	

Marking

Type number	Marking code
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Suggested solder pad layout

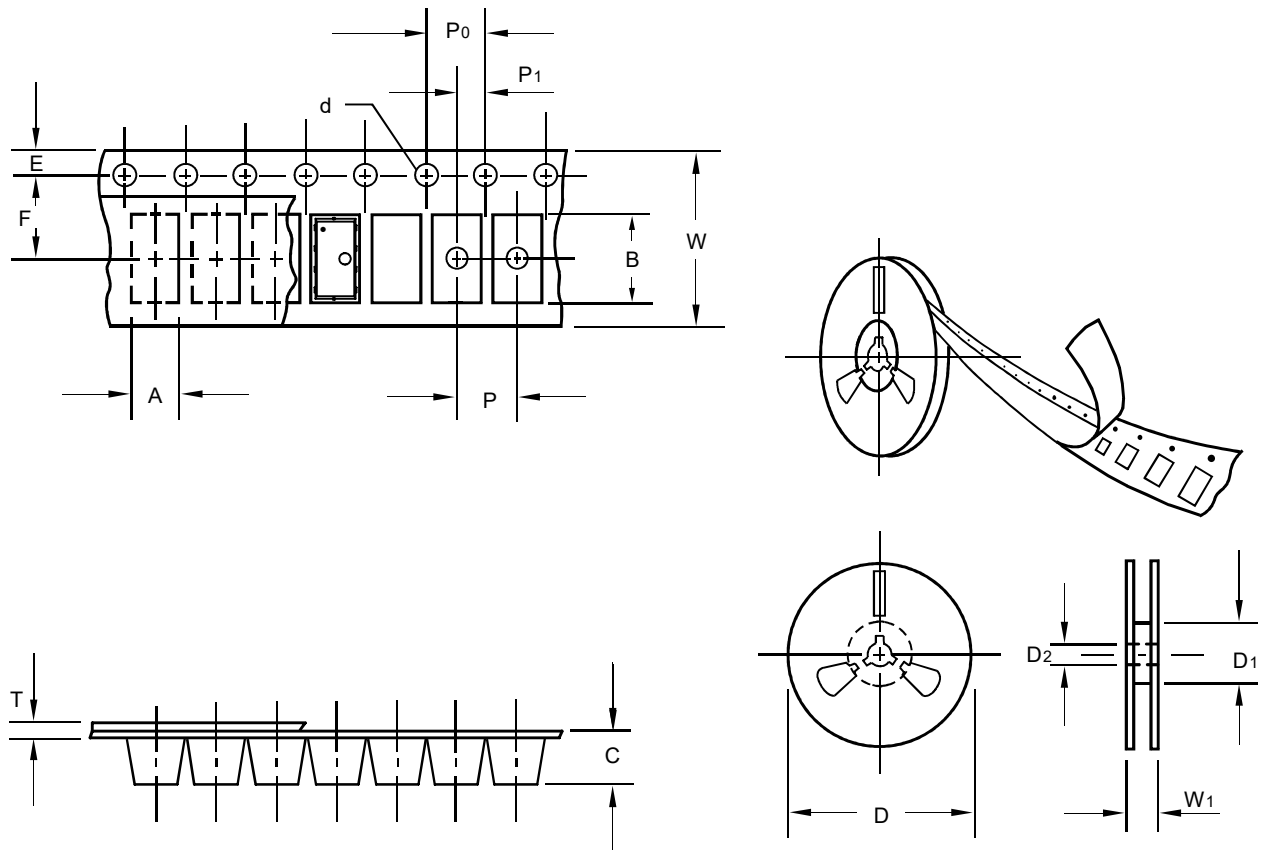


Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only.

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Packing information



unit:mm

Item	Symbol	Tolerance	T5060P8
Carrier width	A	0.1	6.40
Carrier length	B	0.1	5.40
Carrier depth	C	0.1	1.25
Sprocket hole	d	0.1	1.55
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D1	min	100.00
7" Reel outside diameter	D	2.0	-
7" Reel inner diameter	D1	min	-
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.30
Tape width	W	0.3	12.00
Reel width	W1	1.0	17.60

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

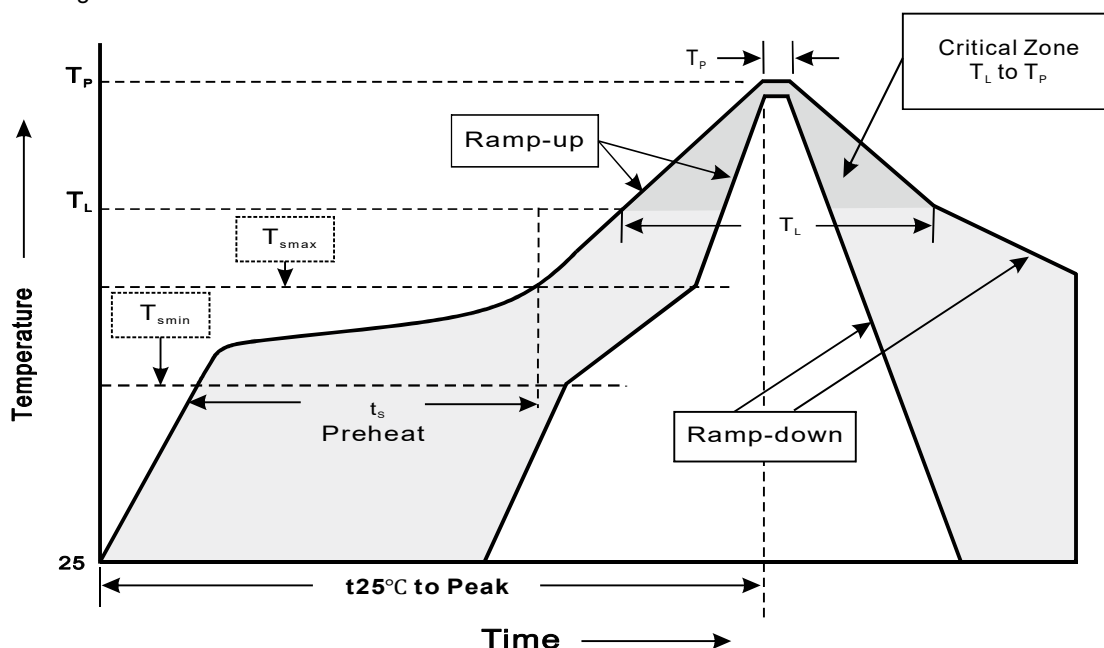
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Reel packing

Device	OUTLINE	Device Package	Reel Size	Reel (PCS)
FMOSAC55N06	TAPING	T5060P8	13inch	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)	$< 3^\circ\text{C}/\text{sec}$
Preheat -Temperature Min (T_{smin}) -Temperature Max (T_{smax}) -Time (min to max) (t_s)	150°C 200°C 60 ~ 120sec
T_{smax} to T_L -Ramp-up rate	$< 3^\circ\text{C}/\text{sec}$
Time maintained above: -Temperature (T_L) -Time(T_L)	217°C 60 ~ 260 sec
Peak Temperature(T_P)	255°C -0/+5°C
Time within 5°C of actual peak Temperature(T_P)	10 ~ 30sec
Ramp-down rate	$< 6^\circ\text{C}/\text{sec}$
Time 25°C to peak temperature	< 6 minutes