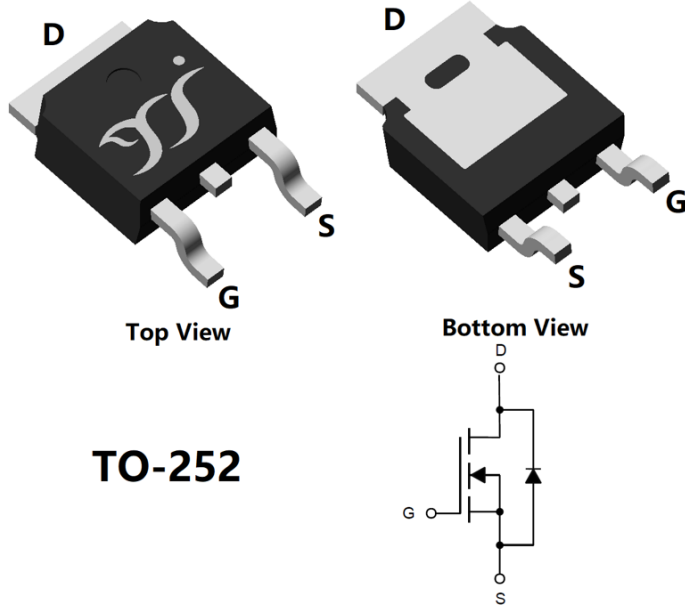


N-Channel Enhancement Mode Field Effect Transistor



Product Summary

• V_{DS}	60V
• I_D	80A
• $R_{DS(ON)}$ (at $V_{GS}=10V$)	<7.5 mohm
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$)	<9.5 mohm
• 100% EAS Tested	
• 100% ∇V_{DS} Tested	

General Description

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- DC-DC Converters
- Power management functions
- Industrial and Motor Drive application

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current (Silicon limited)	$T_c=25^\circ\text{C}$	I_D	80	A
	$T_c=100^\circ\text{C}$		50	
Pulsed Drain Current ^A		I_{DM}	240	A
Avalanche energy ^B		E_{AS}	150	mJ
Total Power Dissipation ^C	$T_c=25^\circ\text{C}$	P_D	78	W
	$T_c=100^\circ\text{C}$		31	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	$t \leq 10\text{S}$	$R_{\theta JA}$	15	20	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Ambient ^D	Steady-State		40	50	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	1.3	1.6	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJD80G06C	F1/F2	YJD80G06C	2500	2500	25000	13" reel



YJD80G06C

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	T _J =25°C		1	μA
			T _J =55°C		5	
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.2	1.7	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =20A		5.5	7.5	mΩ
		V _{GS} = 4.5V, I _D =10A		6.9	9.5	
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V		0.85	1.3	V
Maximum Body-Diode Continuous Current	I _S				80	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =35V, V _{GS} =0V, f=1MHz		2000	2800	pF
Output Capacitance	C _{oss}			390	600	
Reverse Transfer Capacitance	C _{rss}			13	25	
Gate Resistance	R _g	f=1MHz, Open drain		1.6	2.5	Ω
Switching Parameters						
Total Gate Charge	Q _g (10V)	V _{DS} =30V, I _D =20A		34	50	nC
Total Gate Charge	Q _g (4.5V)			15.8	25	
Gate-Source Charge	Q _{gs}			7.8	15	
Gate-Drain Charge	Q _{gd}			5.2	10	
Reverse Recovery Charge	Q _{rr}	I _F =20A, di/dt=200A/us		36		ns
Reverse Recovery Time	t _{rr}			27		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =30V, I _D =12A R _{GEN} =3Ω		10		
Turn-on Rise Time	t _r			36		
Turn-off Delay Time	t _{D(off)}			30		
Turn-off fall Time	t _f			57		

A. Repetitive rating; pulse width limited by max. junction temperature.

B. V_{DD}=50V, R_G=25Ω, L=0.5mH, I_{AS}=24.5A,.

C. Pd is based on max. junction temperature, using junction-case thermal resistance.

D. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation P_{DSM} is based on R_{θJA} ≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.



■ Typical Performance Characteristics

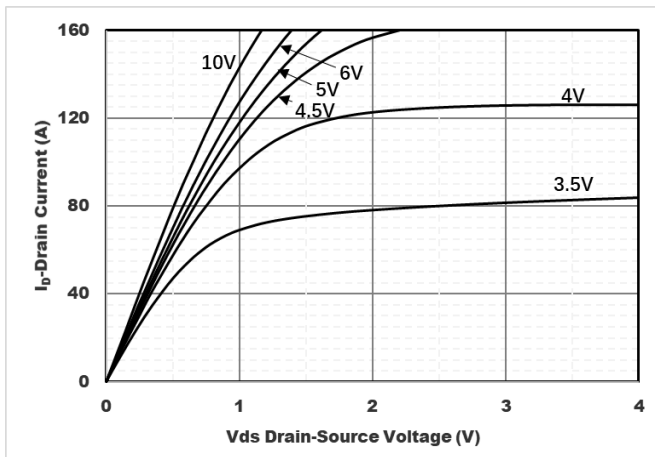


Figure1. Output Characteristics

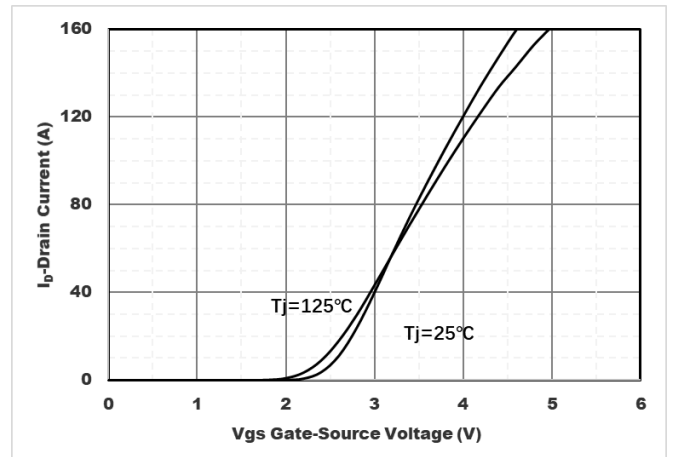


Figure2. Transfer Characteristics

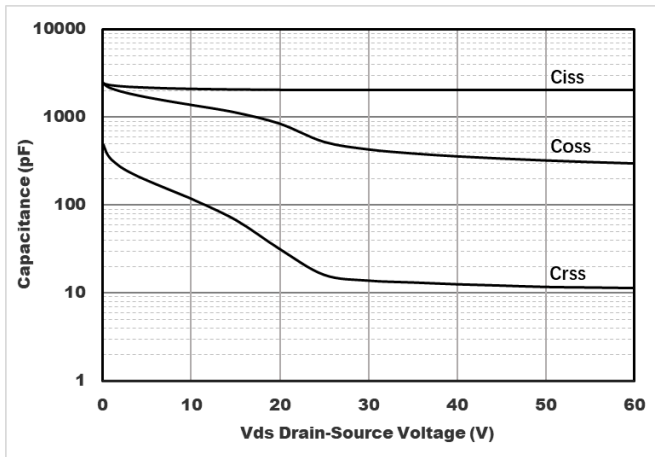


Figure3. Capacitance Characteristics

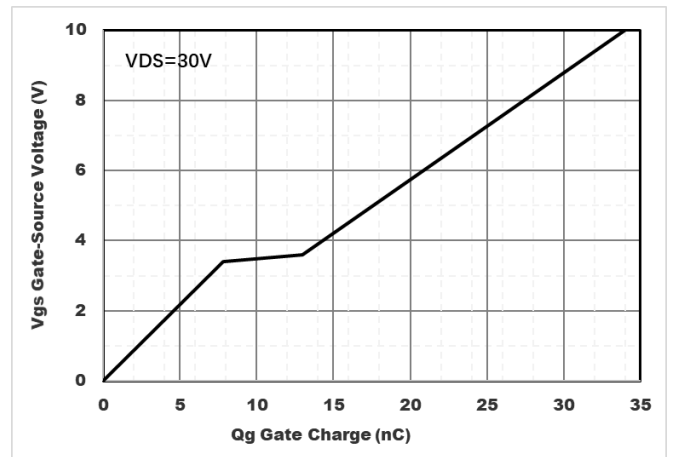


Figure4. Gate Charge

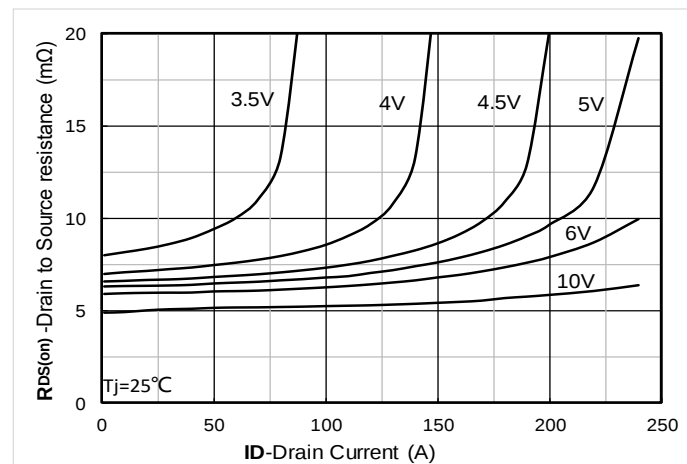


Figure5. Drain-Source on Resistance

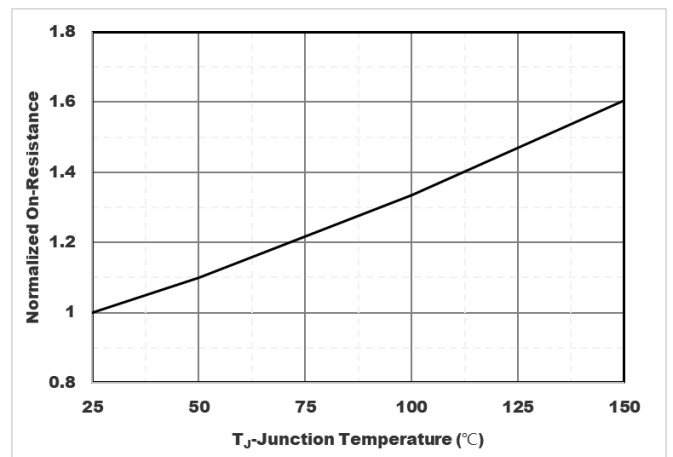


Figure6. Normalized On-Resistance

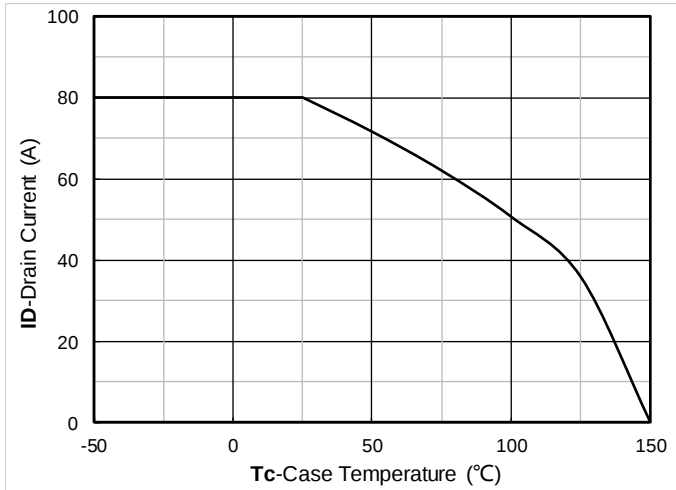


Figure7. Drain current

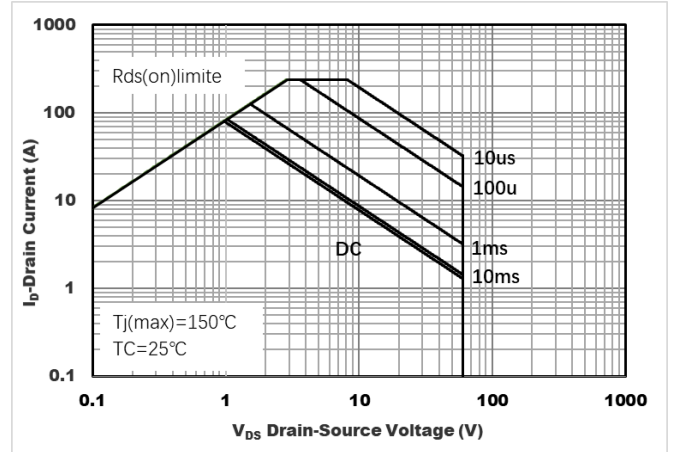


Figure8. Safe Operation Area

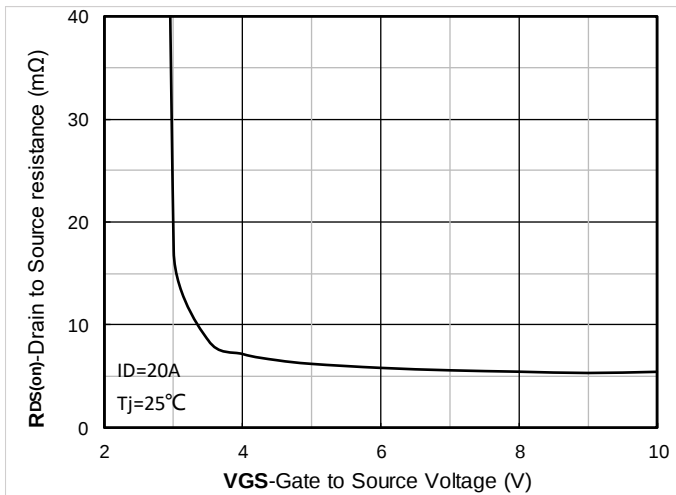


Figure 9. On-Resistance vs Gate to Source Voltage

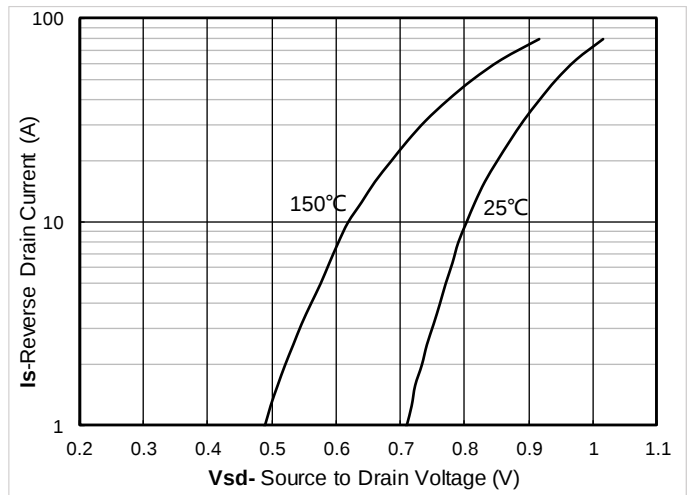


Figure 10. Forward characteristics of reverse diode

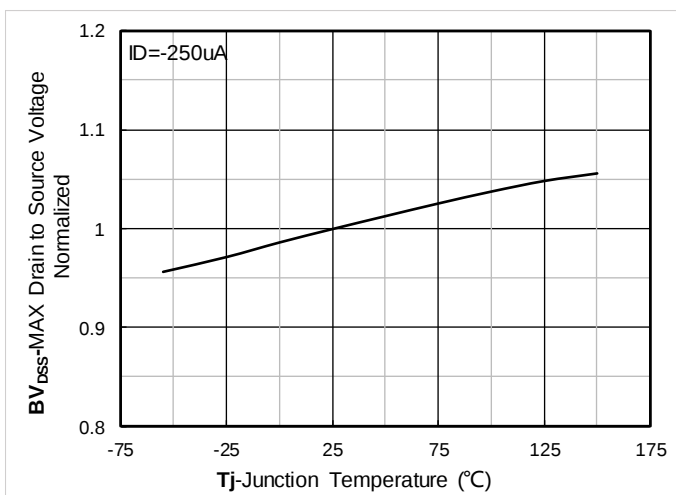


Figure11. Normalized breakdown voltage

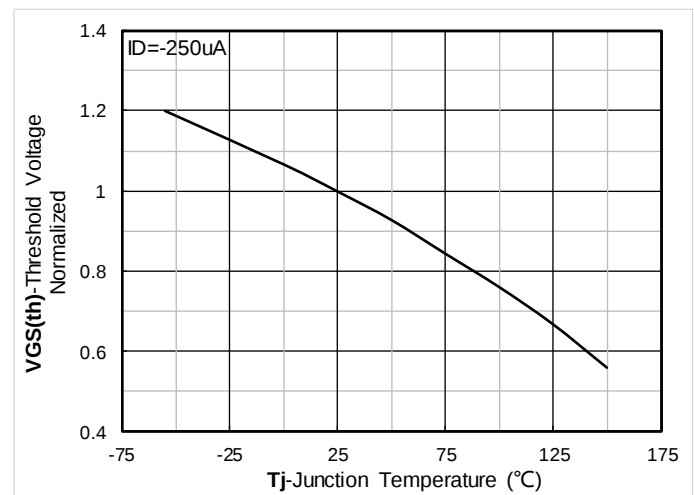


Figure 12. Normalized Threshold voltage

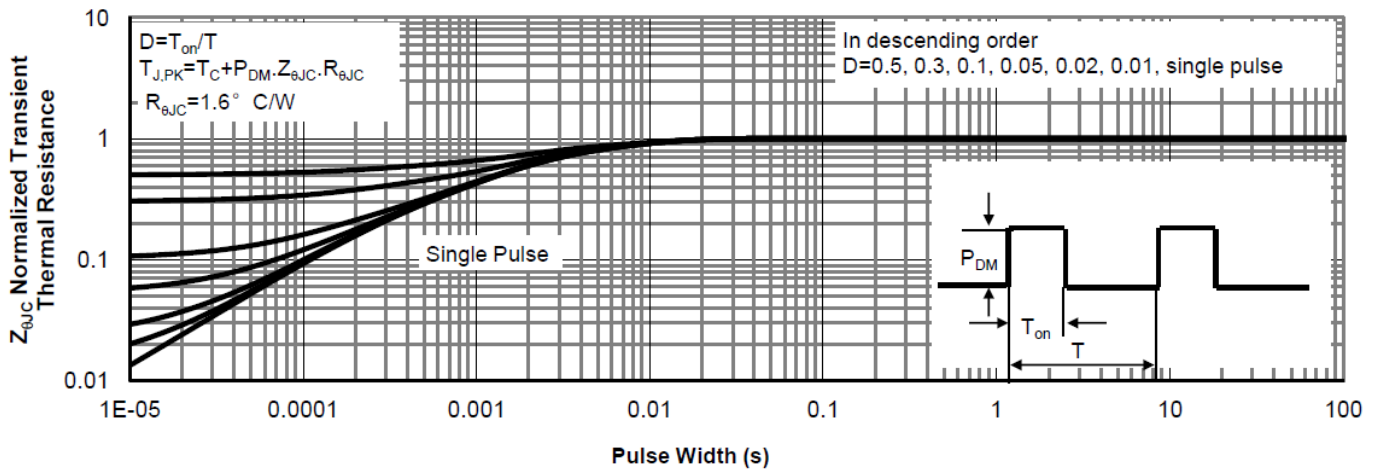
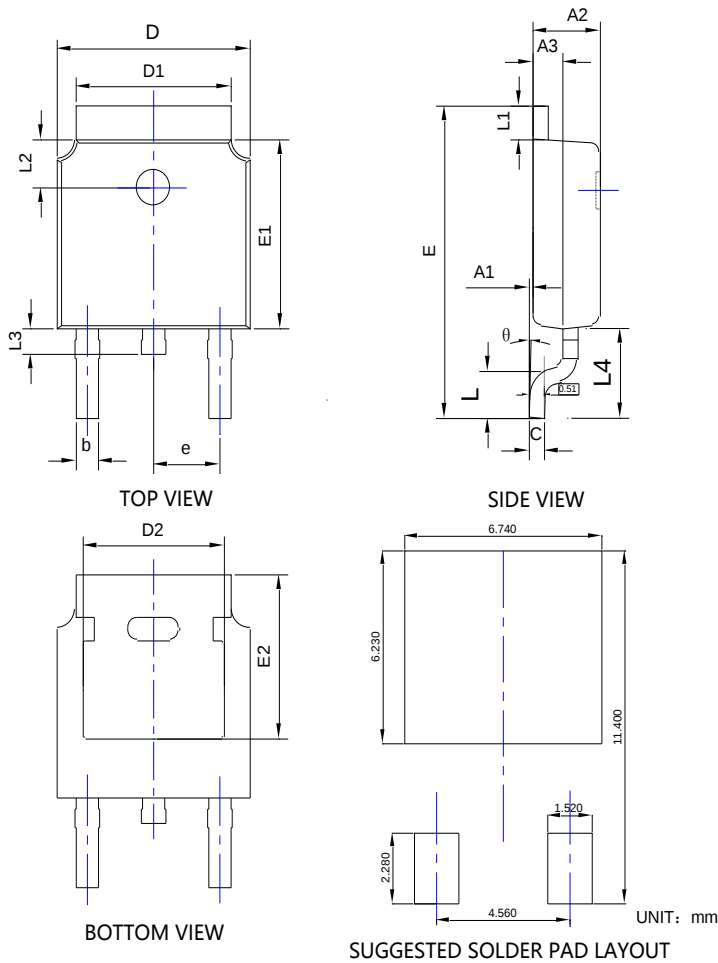


Figure13. Normalized Maximum Transient Thermal Impedance

TO-252-B Package information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.008	0.000	---	0.200
A2	0.087	0.091	0.094	2.200	2.300	2.400
A3	0.035	0.039	0.043	0.900	1.000	1.100
b	0.026	0.030	0.034	0.660	0.760	0.860
c	0.018	0.020	0.023	0.460	0.520	0.580
D	0.256	0.260	0.264	6.500	6.600	6.700
D1	0.203	0.209	0.215	5.150	5.300	5.450
D2	0.181	0.189	0.195	4.600	4.800	4.950
E	0.390	0.398	0.406	9.900	10.100	10.300
E1	0.236	0.240	0.244	6.000	6.100	6.200
E2	0.203	0.209	0.215	5.150	5.300	5.450
e	0.090BSC			2.286BSC		
L	0.049	0.059	0.069	1.250	1.500	1.750
L1	0.035	---	0.050	0.900	---	1.270
L2	0.055	---	0.075	1.400	---	1.900
L3	0.024	0.031	0.039	0.600	0.800	1.000
L4	0.114REF			2.900REF		
θ	0°	---	10°	0°	---	10°

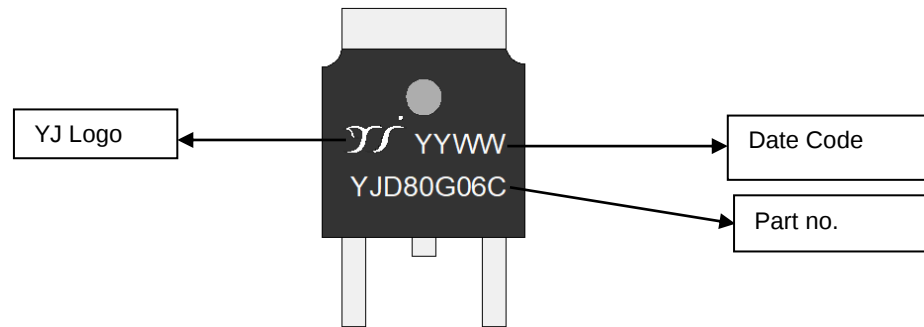
NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



YJD80G06C

■ Marking Information



Note:

1. All marking is at middle of the product body
2. All marking is in laser printing
3. YJD80G06C is part no., YYWW is date code, “YY” is year, “WW” is week
4. Body color: Black



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