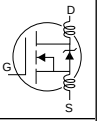
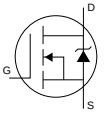
Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	55	——	——	V	V_{GS} = 0V, I_D = 250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	——	0.057	——	V/°C	Reference to 25°C, I_D = 1mA⑤
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	——	——	0.008	Ω	V_{GS} = 10V, I_D = 59A ④
$V_{GS(th)}$	Gate Threshold Voltage	2.0	——	4.0	V	V_{DS} = V_{GS}, I_D = 250µA
g_{fs}	Forward Transconductance	42	——	——	S	V_{DS} = 25V, I_D = 59A⑤
I_{DSS}	Drain-to-Source Leakage Current	——	——	25	µA	V_{DS} = 55V, V_{GS} = 0V
		——	——	250		V_{DS} = 44V, V_{GS} = 0V, T_J = 150°C
I_{GSS}	Gate-to-Source Forward Leakage	——	——	100	nA	V_{GS} = 20V
	Gate-to-Source Reverse Leakage	——	——	-100		V_{GS} = -20V
Q_g	Total Gate Charge	——	——	170	nC	I_D = 59A
Q_{gs}	Gate-to-Source Charge	——	——	32		V_{DS} = 44V
Q_{gd}	Gate-to-Drain ("Miller") Charge	——	——	74		V_{GS} = 10V, See Fig. 6 and 13 ④⑤
$t_{d(on)}$	Turn-On Delay Time	——	14	——	ns	V_{DD} = 28V
t_r	Rise Time	——	100	——		I_D = 59A
$t_{d(off)}$	Turn-Off Delay Time	——	43	——		R_G = 2.5Ω
t_f	Fall Time	——	70	——		R_D = 0.39Ω, See Fig. 10④⑤
L_D	Internal Drain Inductance	——	5.0	——	nH	Between lead, 6mm (0.25in.) from package and center of die contact
L_S	Internal Source Inductance	——	13	——		
C_{iss}	Input Capacitance	——	4000	——	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	——	1300	——		V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance	——	480	——		f = 1.0MHz, See Fig. 5⑤



Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	——	——	110⑥		MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	——	——	390		
V_{SD}	Diode Forward Voltage	——	——	1.3	V	T_J = 25°C, I_S = 59A, V_{GS} = 0V ④
t_{rr}	Reverse Recovery Time	——	110	170	ns	T_J = 25°C, I_F = 59A
Q_{rr}	Reverse Recovery Charge	——	450	680	nC	di/dt = 100A/µs ④⑤



Notes:

① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)

② V_{DD} = 25V, starting T_J = 25°C, L = 190µH R_G = 25Ω, I_{AS} = 59A. (See Figure 12)

③ I_{SD} ≤ 59A, di/dt ≤ 290A/µs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 175°C

④ Pulse width ≤ 300µs; duty cycle ≤ 2%.

⑤ Uses IRF3205 data and test conditions

⑥ Caculated continuous current based on maximum allowable junction temperature; for recommended current-handling of the package refer to Design Tip # 93-4

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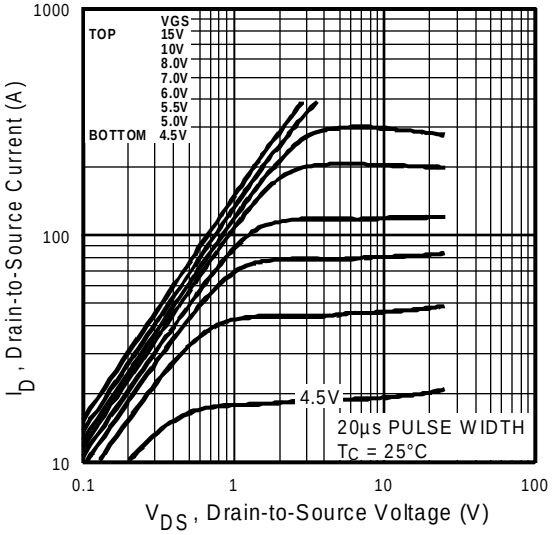

Fig 1. Typical Output Characteristics

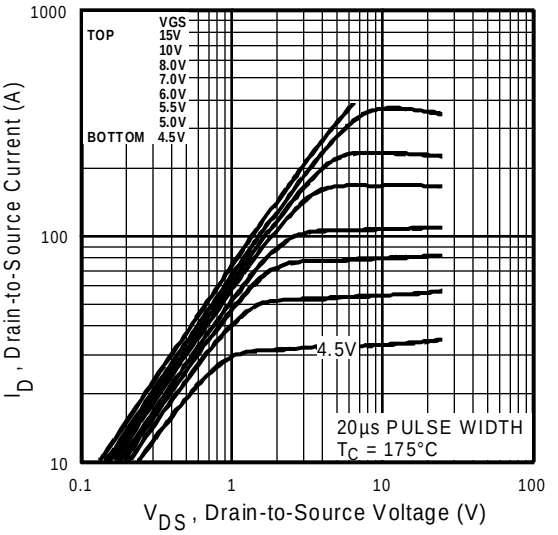

Fig 2. Typical Output Characteristics

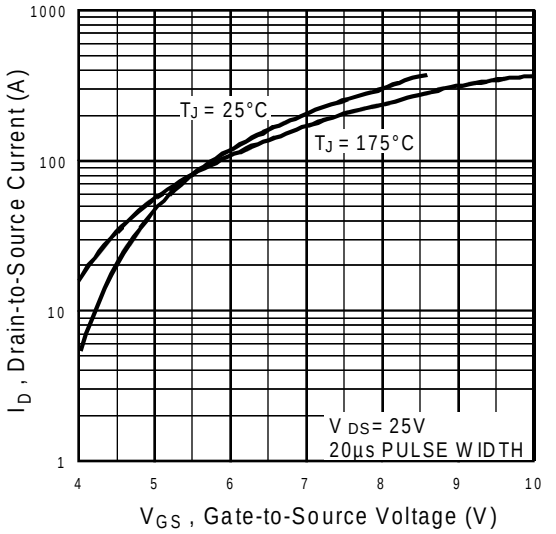

Fig 3. Typical Transfer Characteristics

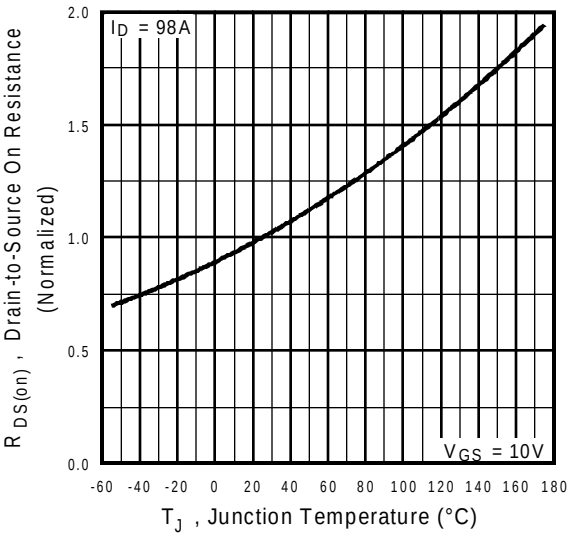

Fig 4. Normalized On-Resistance Vs. Temperature

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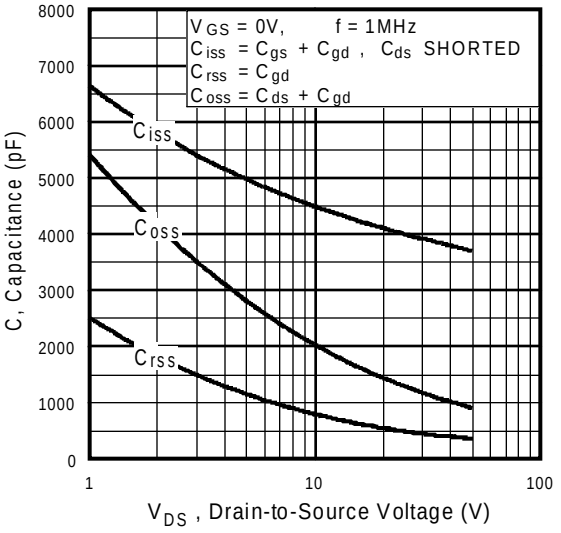

Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

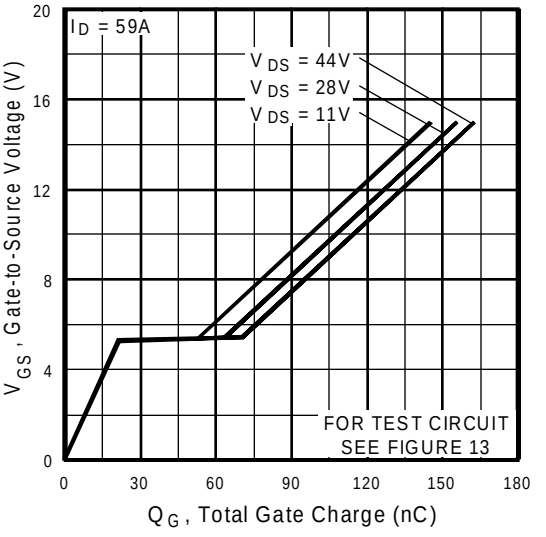

Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

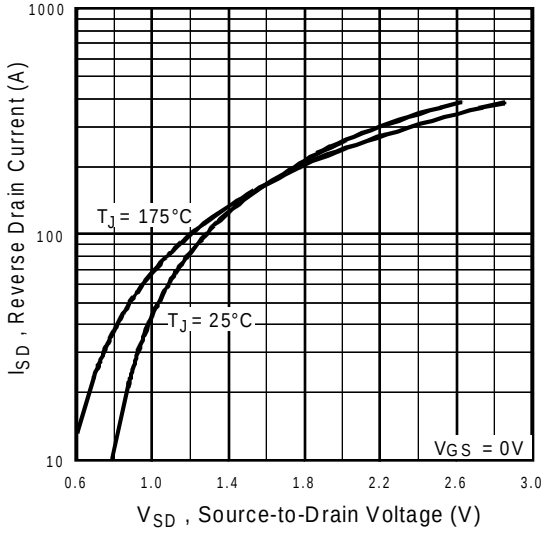

Fig 7. Typical Source-Drain Diode Forward Voltage

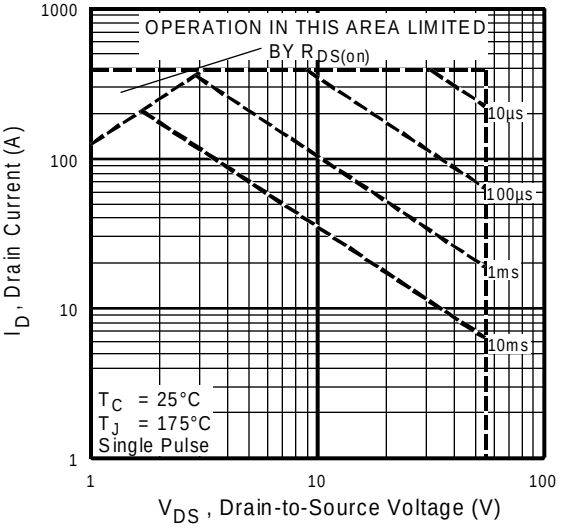

Fig 8. Maximum Safe Operating Area

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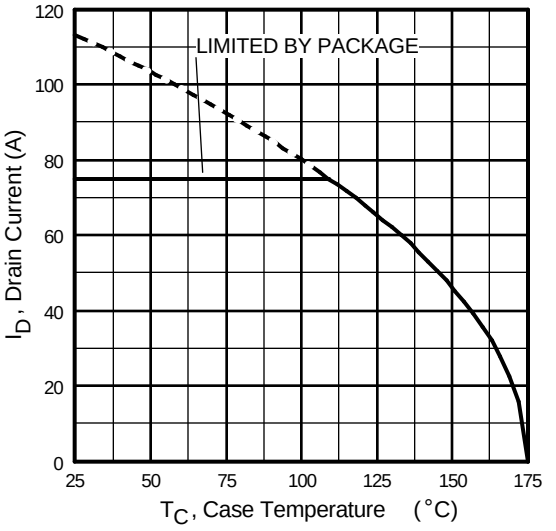

Fig 9. Maximum Drain Current Vs. Case Temperature

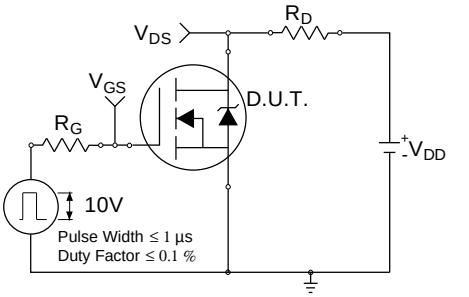

Fig 10a. Switching Time Test Circuit

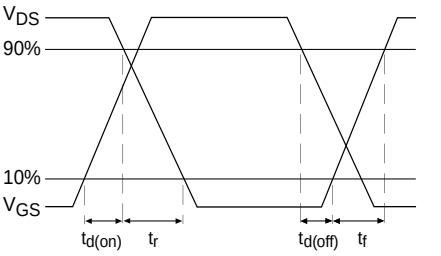

Fig 10b. Switching Time Waveforms

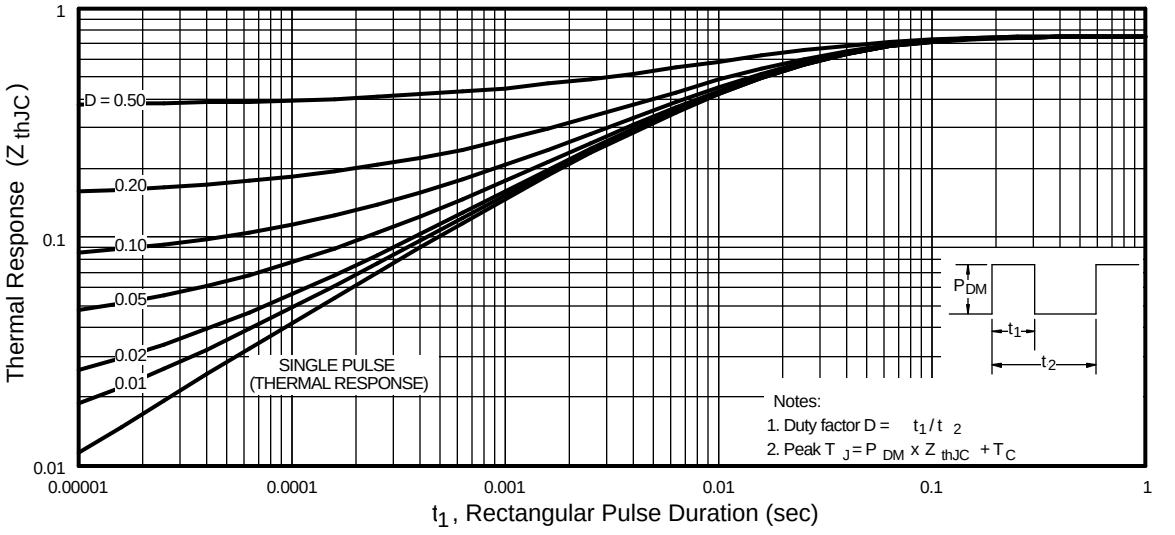

Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

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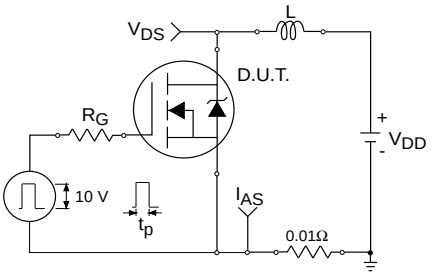

Fig 12a. Unclamped Inductive Test Circuit

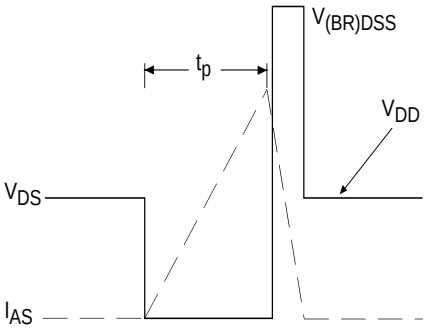

Fig 12b. Unclamped Inductive Waveforms

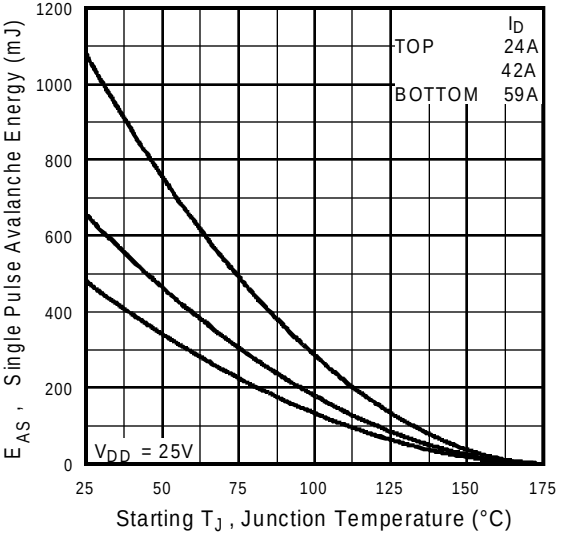

Fig 12c. Maximum Avalanche Energy Vs. Drain Current

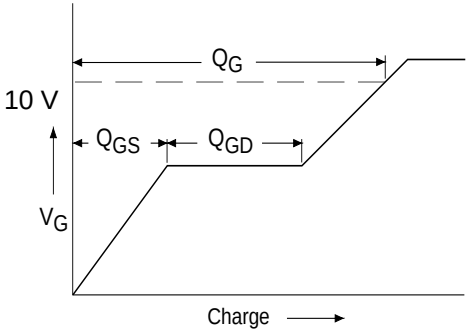

Fig 13a. Basic Gate Charge Waveform

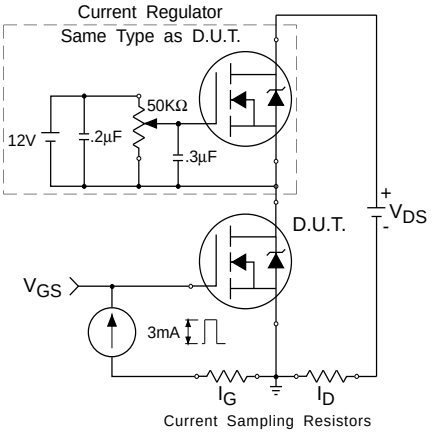

Fig 13b. Gate Charge Test Circuit

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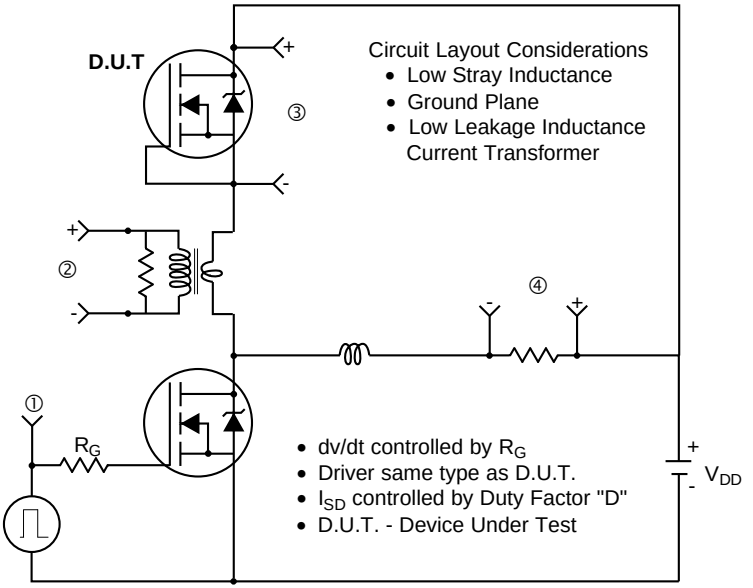
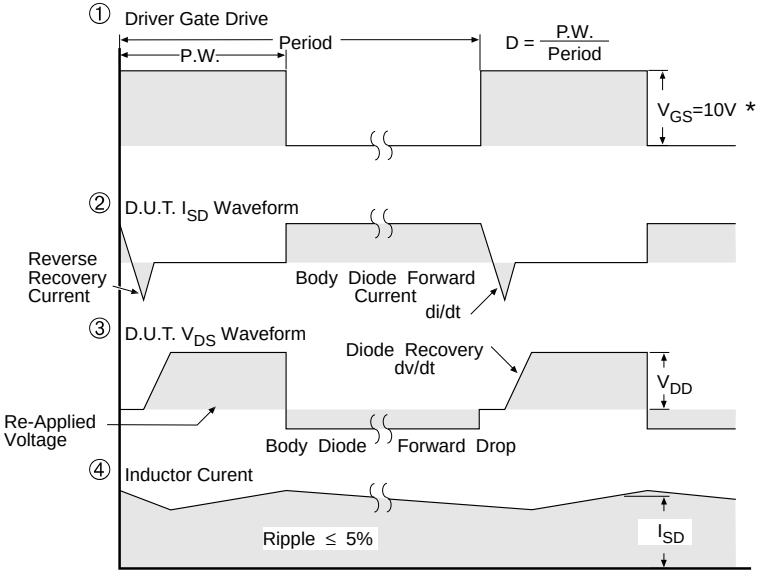
Peak Diode Recovery dv/dt Test Circuit





* V_{GS} = 5V for Logic Level Devices

Fig 14. For N-Channel HEXFETS

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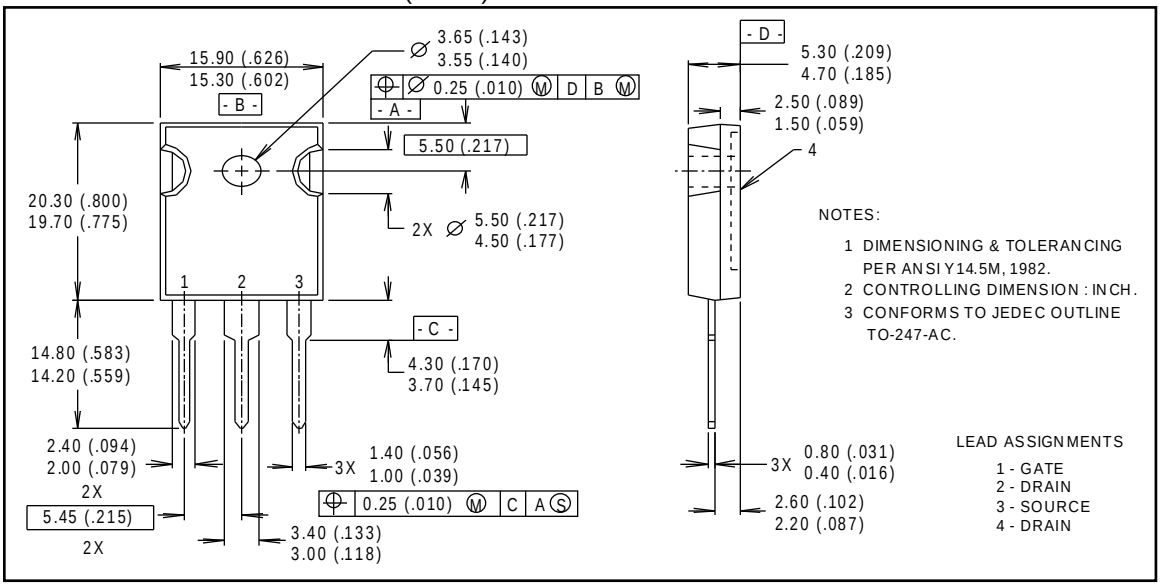
Package Outline

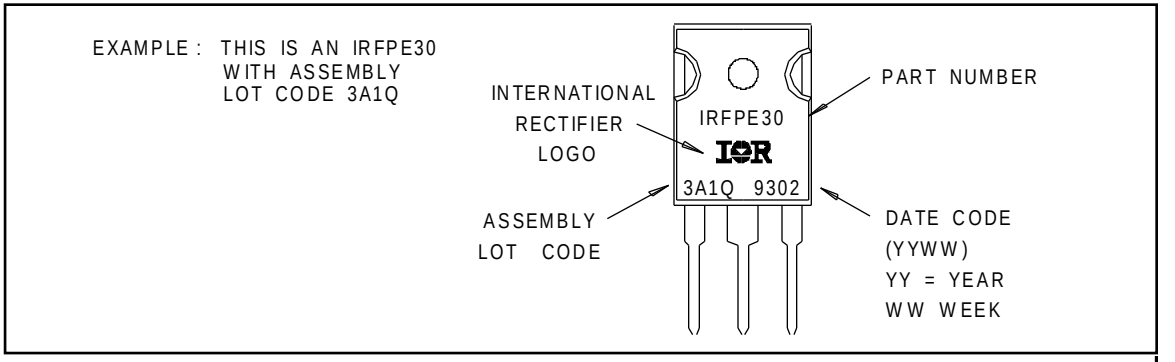
TO-247AC Outline

Dimensions are shown in millimeters (inches)



Part Marking Information

TO-247AC



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