

Power MOS Field-Effect Transistors

N-Channel Enhancement-Mode Power Field-Effect Transistors

13 A and 15 A, 350 V - 400 V

$r_{DS(on)} = 0.3 \Omega$ and 0.4Ω

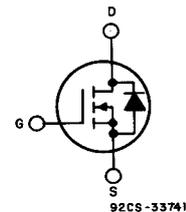
Features:

- SOA is power-dissipation limited
- Nanosecond switching speeds
- Linear transfer characteristics
- High input impedance
- Majority carrier device

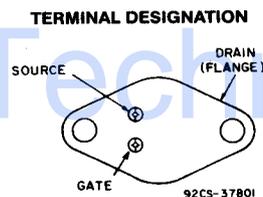
The IRF350, IRF351, IRF352 and IRF353 are n-channel enhancement-mode silicon-gate power field-effect transistors designed for applications such as switching regulators, switching converters, motor drivers, relay drivers, and drivers for high-power bipolar switching transistors requiring high speed and low gate-drive power. These types can be operated directly from integrated circuits.

The IRF-types are supplied in the JEDEC TO-204AA metal package.

N-CHANNEL ENHANCEMENT MODE



TERMINAL DIAGRAM



JEDEC TO-204AA

Absolute Maximum Ratings

Parameter	IRF350	IRF351	IRF352	IRF353	Units
V_{DS} Drain - Source Voltage ①	400	350	400	350	V
V_{DGR} Drain - Gate Voltage ($R_{GS} = 20 \text{ k}\Omega$) ①	400	350	400	350	V
$I_D @ T_C = 25^\circ\text{C}$ Continuous Drain Current	15	15	13	13	A
$I_D @ T_C = 100^\circ\text{C}$ Continuous Drain Current	9.0	9.0	8.0	8.0	A
I_{DM} Pulsed Drain Current ③	60	60	52	52	A
V_{GS} Gate - Source Voltage	± 20				V
$P_D @ T_C = 25^\circ\text{C}$ Max. Power Dissipation	150			(See Fig. 14)	W
Linear Derating Factor	1.2			(See Fig. 14)	W/ $^\circ\text{C}$
I_{LM} Inductive Current, Clamped	(See Fig. 15 and 16) $L = 100\mu\text{H}$				A
	60	60	52	52	
T_J Operating Junction and T_{stg} Storage Temperature Range	-55 to 150				$^\circ\text{C}$
Lead Temperature	300 (0.063 in. (1.6mm) from case for 10s)				$^\circ\text{C}$

IRF350, IRF351, IRF352, IRF353

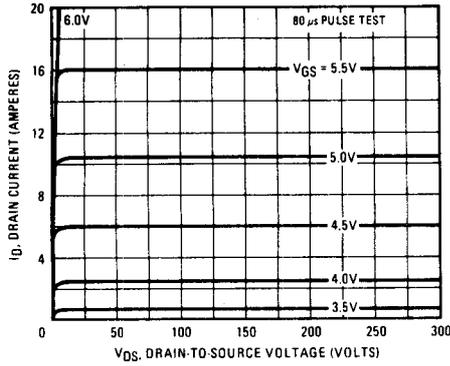


Fig. 1 - Typical Output Characteristics

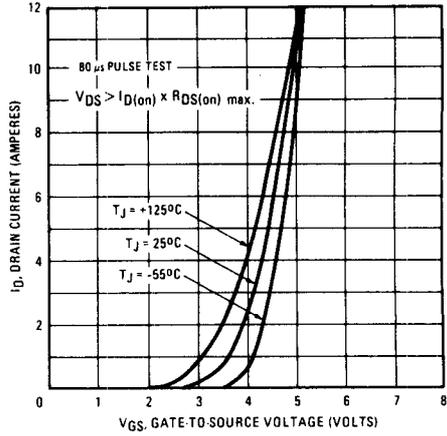


Fig. 2 - Typical Transfer Characteristics

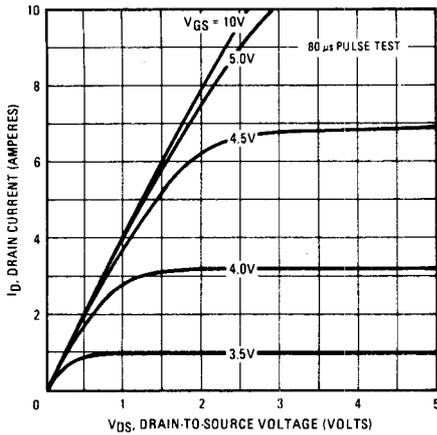


Fig. 3 - Typical Saturation Characteristics

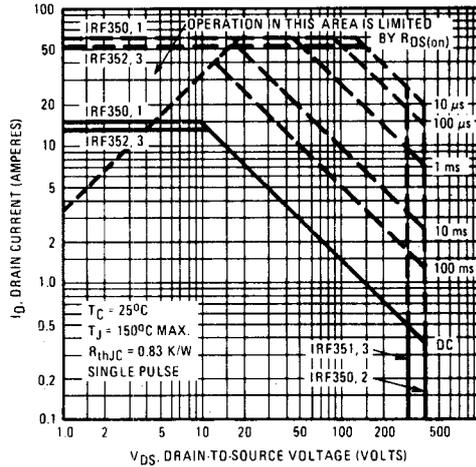


Fig. 4 - Maximum Safe Operating Area

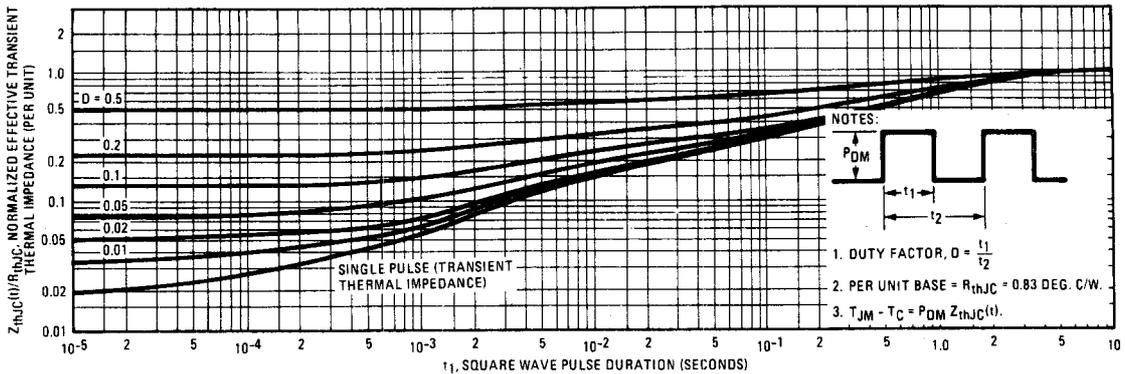


Fig. 5 - Maximum Effective Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration

IRF350, IRF351, IRF352, IRF353

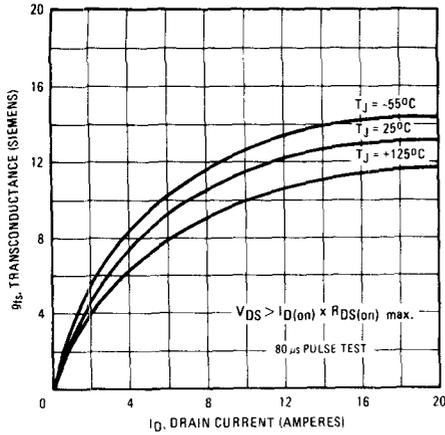


Fig. 6 – Typical Transconductance Vs. Drain Current

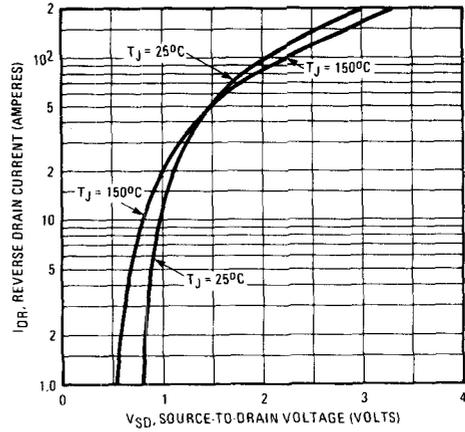


Fig. 7 – Typical Source-Drain Diode Forward Voltage

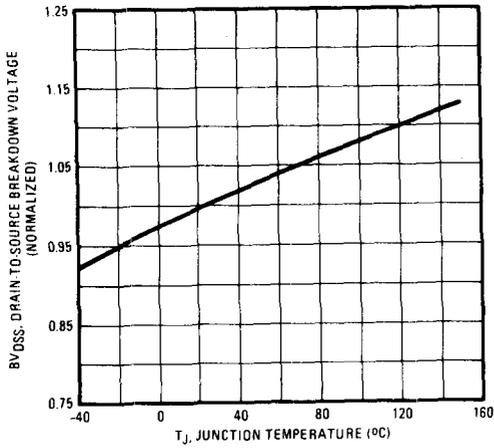


Fig. 8 – Breakdown Voltage Vs. Temperature

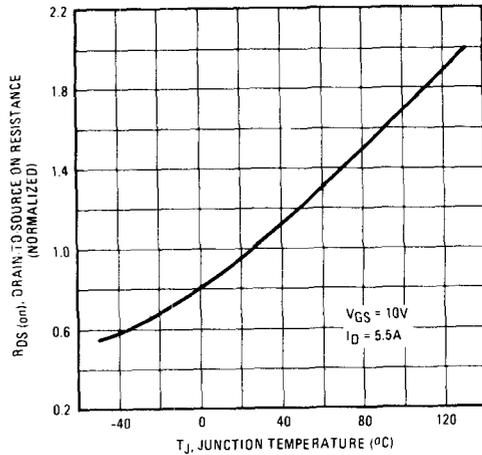


Fig. 9 – Normalized On-Resistance Vs. Temperature

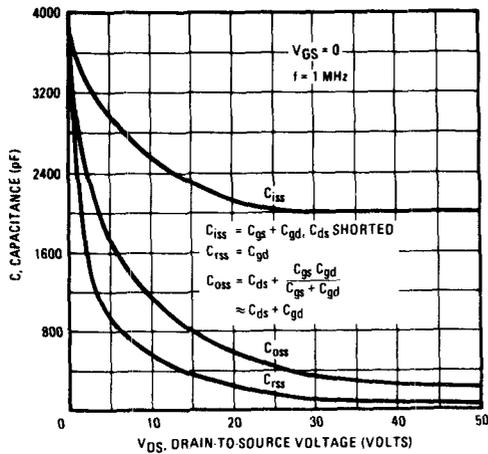


Fig. 10 – Typical Capacitance Vs. Drain-to-Source Voltage

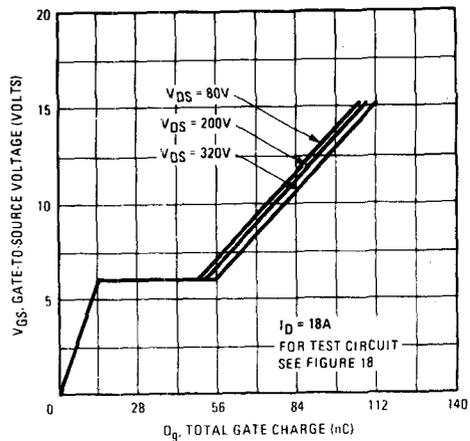


Fig. 11 – Typical Gate Charge Vs. Gate-to-Source Voltage

IRF350, IRF351, IRF352, IRF353

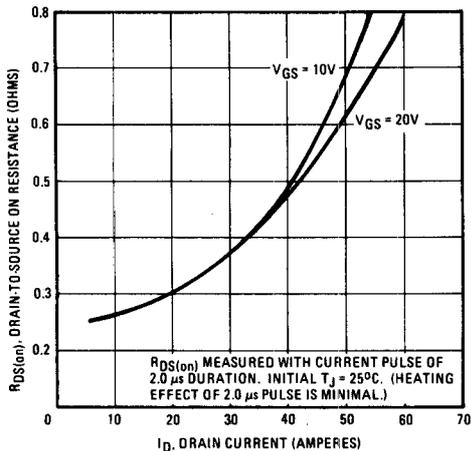


Fig. 12 – Typical On-Resistance Vs. Drain Current

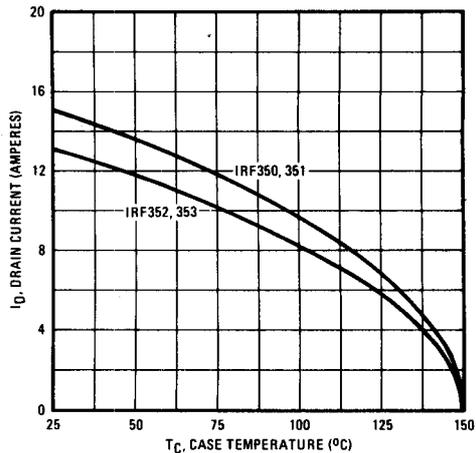


Fig. 13 – Maximum Drain Current Vs. Case Temperature

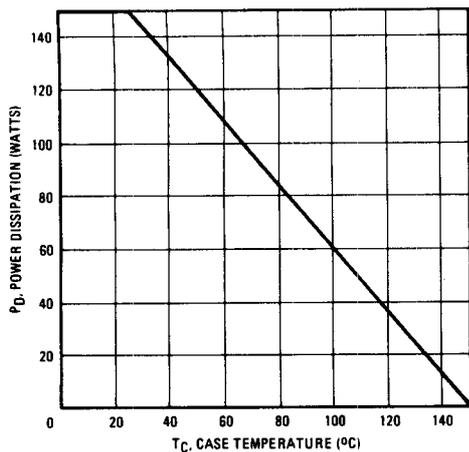


Fig. 14 – Power Vs. Temperature Derating Curve

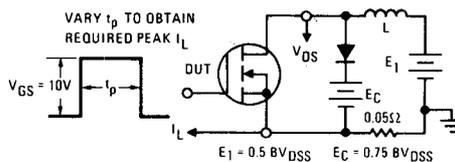


Fig. 15 – Clamped Inductive Test Circuit

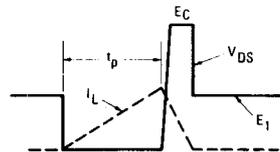


Fig. 16 – Clamped Inductive Waveforms

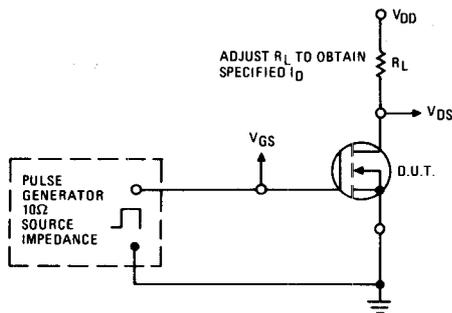


Fig. 17 – Switching Time Test Circuit

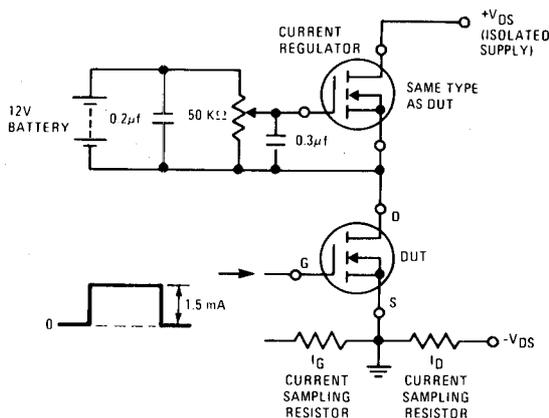


Fig. 18 – Gate Charge Test Circuit