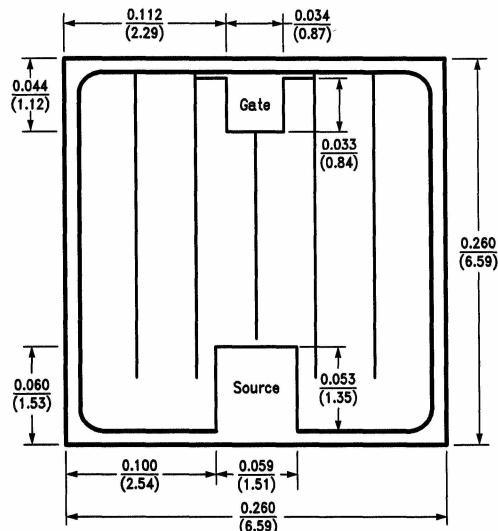




Process F3 N-Channel Power MOSFET



TL/G/10041-67

DESCRIPTION

These dice are n-channel, enhancement mode, power MOSFETs designed especially for high power, high speed applications, such as power supplies, AC and DC motor control and high energy pulse circuits.

This process is available in the following device types:

TO-204 (Case 42)	TO-247 (Case 40)
IRF350CF	IRFP350CF
IRF350	IRFP350
IRF351	IRFP351
IRF352	IRFP352
IRF353	IRFP353

Electrical Characteristics $T_C = 25^\circ\text{C}$ (unless otherwise noted)

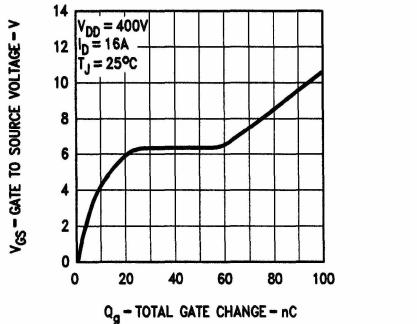
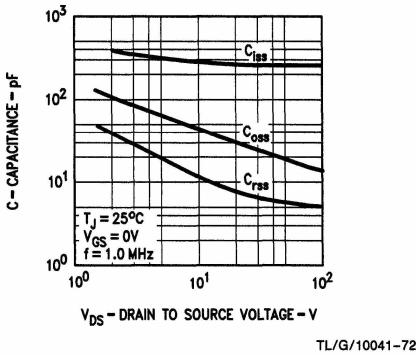
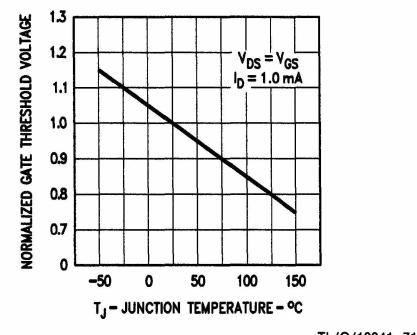
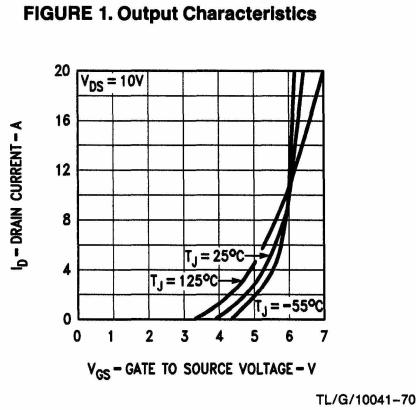
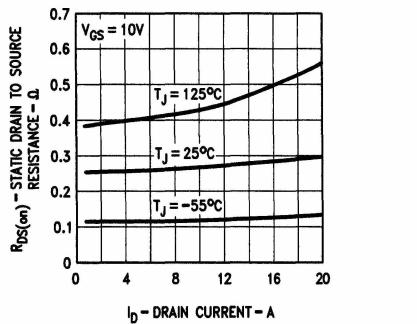
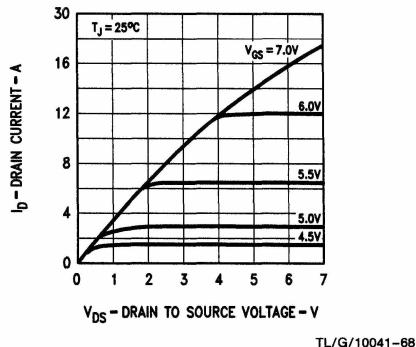
Symbol	Parameter	Test Conditions	Min	Max	Units
V_{DSS}	Drain to Source Voltage (Note 1)	$I_D = 250 \mu\text{A}; V_{GS} = 0\text{V}$	400		V
I_{DSS}	Zero Gate Voltage Drain	$V_{DS} = \text{Rated Voltage}$ $V_{GS} = 0\text{V}$		250	μA
I_{GSS}	Gate Leakage Current	$V_{DS} = \pm 20\text{V}; V_{DS} = 0\text{V}$		± 100	nA
$V_{GS(\text{TH})}$	Gate Threshold Voltage	$I_D = 250 \mu\text{A}; V_{DS} = V_{GS}$	2.0	4.0	V
$R_{DS(\text{ON})}$	Static On-Resistance (Note 2)	$V_{GS} = 10\text{V}; I_D = 8\text{A}$		0.3	Ω
g_{FS}	Forward Transconductance	$V_{DS} = 10\text{V}; I_D = 8\text{A}$	8.0		Siemens
C_{iss}	Input Capacitance	$V_{DS} = 25\text{V}; V_{GS} = 0\text{V}$ $f = 1\text{ MHz}$		3000	pF
C_{oss}	Output Capacitance			600	pF
C_{rss}	Reverse Transfer			200	pF
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 180\text{V}; I_D = 8\text{A}$ $V_{GS} = 10\text{V}; R_{GEN} = 4.7\Omega$		35	ns
t_r	Rise Time	$R_{GS} = 4.7\Omega$		65	ns
$t_{d(off)}$	Turn-Off Delay Time			150	ns
t_f	Fall Time			75	ns
Q_g	Total Gate Charge	$V_{GS} = 10\text{V}; I_D = 16\text{A}$ $V_{DD} = 400\text{V}$		120	nC

Note 1: $T_J = +25^\circ\text{C}$ to $+150^\circ\text{C}$.

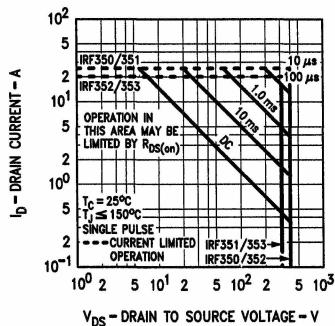
Note 2: Pulse Test: Pulse Width $\leq 80 \mu\text{s}$, Duty Cycle $\leq 1\%$.

Process F3

Typical Performance Characteristics

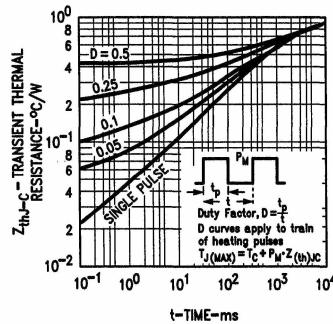


Typical Performance Characteristics (Continued)



TL/G/10041-74

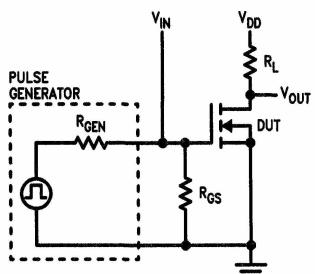
FIGURE 7. Forward Biased Safe Operating Area



TL/G/10041-75

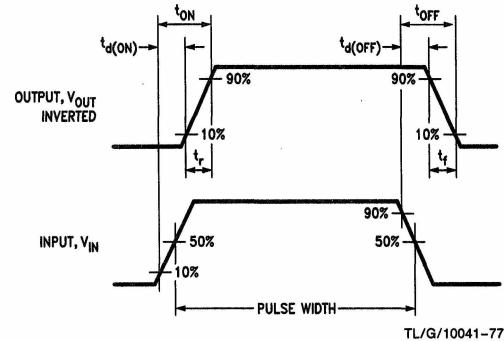
FIGURE 8. Transient Thermal Resistance vs Time

Typical Electrical Characteristics



TL/G/10041-76

FIGURE 9. Switching Test Circuit



TL/G/10041-77

Probe Testing

Each die is probed and electrically tested to the limits specified in the Electrical Characteristics Table. However, high current parameters and thermal characteristics specified in the packaged device data sheets cannot be tested or guaranteed in die form because of the power dissipation limits of unmounted die and current handling limits of probe tips.

These parameters are:

Thermal Resistance

Forward Voltage Drop at Rated Current

Reverse Recovery Characteristics at Rated Current

Surge Current