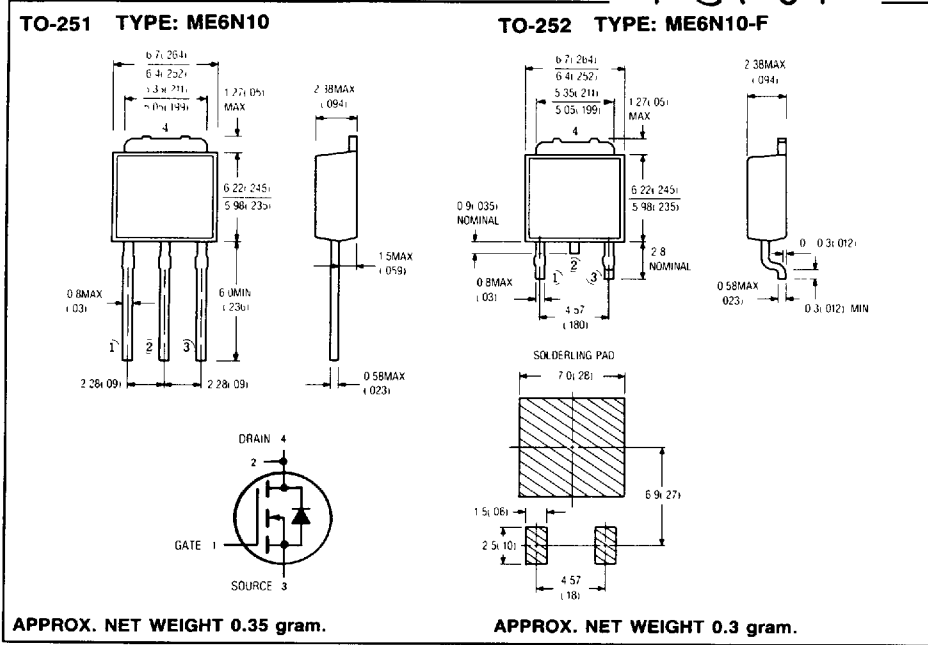


ID	V _{DSS}	R _{DS(on)}
6A	100V	0.25Ω

N-Channel Power MOSFET

FEATURES:

- Fast Switching Speed
- Low On-Resistance
- Ease of Paralleling
- No Second Breakdown
- TO-252 Surface Mount Package available on 16mm Tape



ABSOLUTE MAXIMUM RATINGS

Ratings	Symbol	Condition	Rated Value	Unit
Drain-Source Voltage	V _{DSS}		100	V
Drain-Gate Voltage	V _{DGR}	R _{GS} = 1MΩ	100	V
Gate-Source Voltage	V _{GS}	Continuous	± 20	V
	V _{GSM}	Non-repetitive (t _p ≤ 50 μs)	± 40	V
Drain Current	I _D	Continuous	6	A
	I _{DM}	Pulsed	20	A
Total Power Dissipation	P _D	@T _C = 25°C Derate above 25°C	20 0.16	W W/°C
		@T _A = 25°C Derate above 25°C	1.25 0.01	W W/°C
		@T _A = 25°C (1) Derate above 25°C	1.75 0.014	W W/°C
Operating and Storage Junction Temperature Range	T _j , T _{stg}		-55 ~ +150	°C

THERMAL CHARACTERISTICS

Thermal Resistance	R _{thJC}	Junction to Case	6.25	°C/W
	R _{thJA}	Junction to Ambient	100	
		Junction to Ambient (1)	71.4	

(1) These ratings are applicable when mounting on the minimum soldering pad size recommended.

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristics	Symbol	Test Condition	Min.	Typ.	Max.	Unit
-----------------	--------	----------------	------	------	------	------

OFF CHARACTERISTICS

Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 0.25mA$	100	—	—	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$	—	—	10	μA
		$V_{DS} = 100V, V_{GS} = 0V, T_j = 125^\circ\text{C}$	—	—	100	
Gate-Source Leakage Current, Forward	I_{GSSF}	$V_{GSF} = 20V, V_{DS} = 0V$	—	—	100	nA
Gate-Source Leakage Current, Reverse	I_{GSSR}	$V_{GSR} = 20V, V_{DS} = 0V$	—	—	100	nA

ON CHARACTERISTICS

Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 0.25\text{ mA}$	2.0	—	4.5	V
		$V_{DS} = V_{GS}, I_D = 0.25\text{ mA}, T_j = 100^\circ\text{C}$	1.5	—	4.0	
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3A$	—	—	0.25	Ω
Drain-Source On-Voltage	$V_{DS(on)}$	$V_{GS} = 10V, I_D = 6A$	—	—	1.6	V
		$V_{GS} = 10V, I_D = 3A, T_j = 100^\circ\text{C}$	—	—	1.5	
Forward Transconductance	g_{FS}	$V_{DS} = 15V, I_D = 3A$	1.0	—	—	mhos

CAPACITANCES

Input Capacitance	C_{iss}	$V_{DS} = 25V$ $V_{GS} = 0V$ $f = 1\text{ MHz}$	—	—	600	pF
Output Capacitance	C_{oss}		—	—	400	
Reverse Transfer Capacitance	C_{rss}		—	—	80	

SWITCHING CHARACTERISTICS*

Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 25V, V_{GS} = 10V$ $I_D = 3A$ $R_{gen} = 50\Omega$ See Page 30, Fig. A Switching Time Waveforms	—	—	50	ns
Rise Time	t_r		—	—	150	
Turn-Off Delay Time	$t_{d(off)}$		—	—	100	
Fall Time	t_f		—	—	50	
Total Gate Charge	Q_g	$V_{DS} = 80V$ $I_D = 6A$ $V_{GS} = 10V$	—	13	30	nC
Gate-Source Charge	Q_{gs}		—	6	—	
Gate-Drain Charge	Q_{gd}		—	7	—	

SOURCE DRAIN DIODE CHARACTERISTICS*

Forward On-Voltage	V_{SD}	$I_S = 6A, V_{GS} = 0V$	—	1.7	3	V
Forward Turn-On Time	t_{on}	$I_S = 6A, V_{GS} = 0V,$ $-di/dt = 100A/\mu s$	limited by stray inductance			
Reverse Recovery Time	t_{rr}		—	100	—	ns

*Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Fig. 1 - Typical On-Region Characteristics

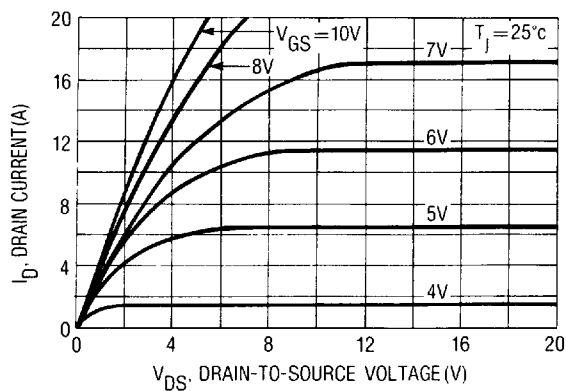


Fig. 2 - Typical Gate Threshold Voltage Variation With Junction Temperature

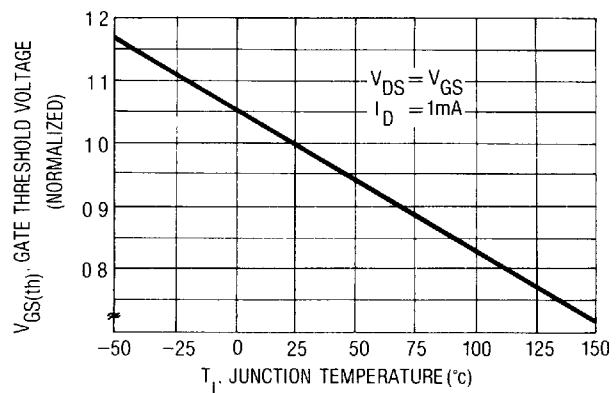


Fig. 3 - Typical Transfer Characteristics

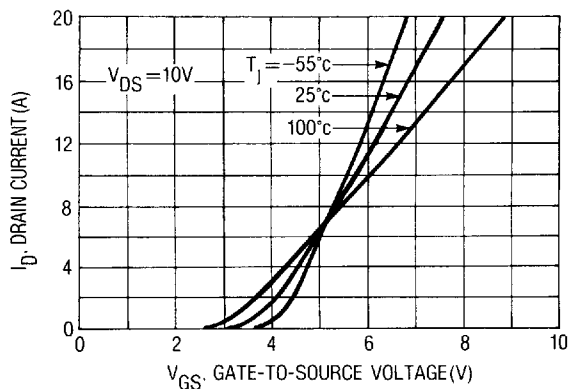


Fig. 4 - Typical Breakdown Voltage Variation With Junction Temperature

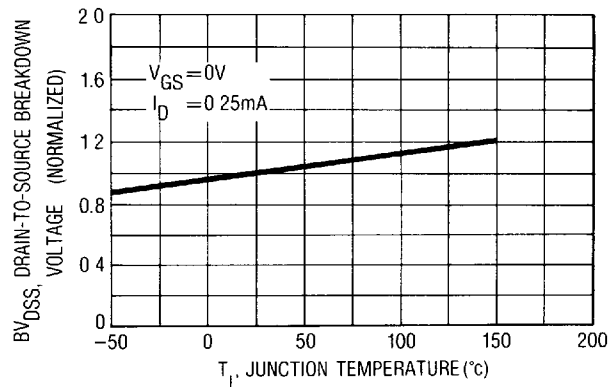


Fig. 5 - Typical On-Resistance Vs. Drain Current

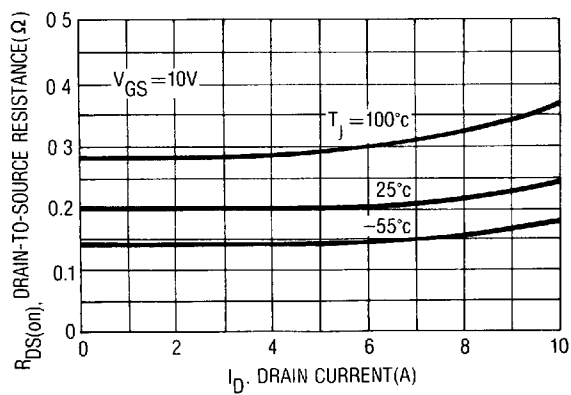


Fig. 6 - Typical On-Resistance Variation With Junction Temperature

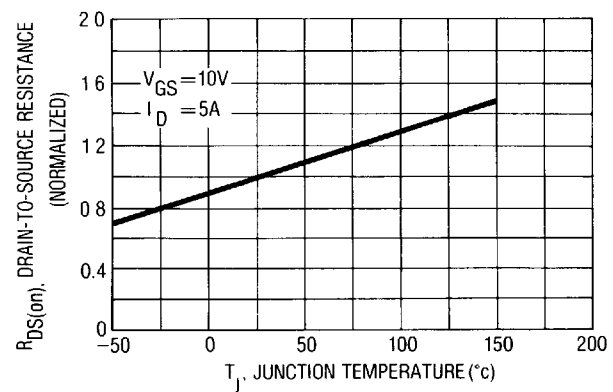
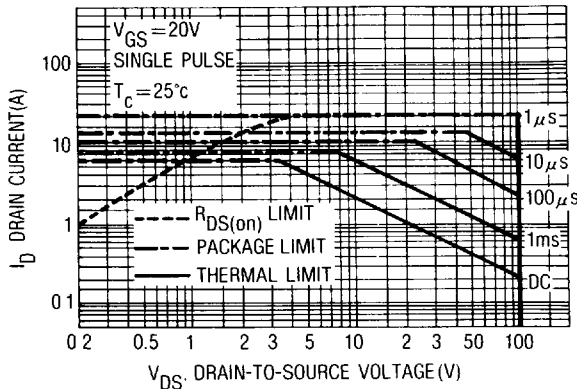
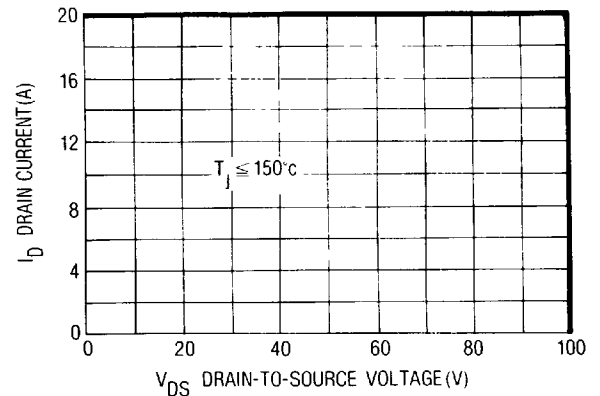
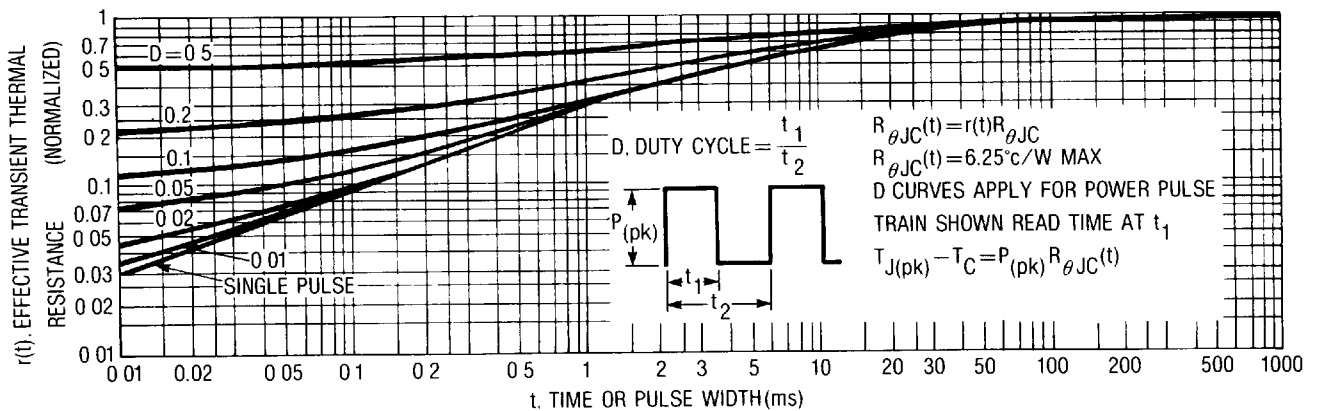
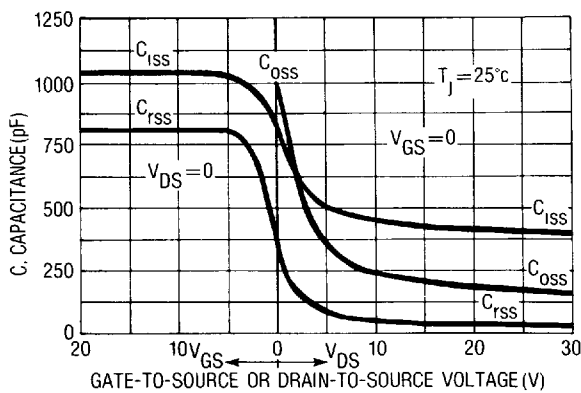


Fig. 7 - Maximum Rated Forward Biased Safe Operating Area

Fig. 8 - Maximum Rated Switching Safe Operating Area

The power averaged over a complete switching cycle must be less than $\frac{T_{J(max)} - T_c}{R_{\theta JC}}$


Fig. 9 - Thermal Response

Fig. 10 - Typical Capacitance Variation With Voltage

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