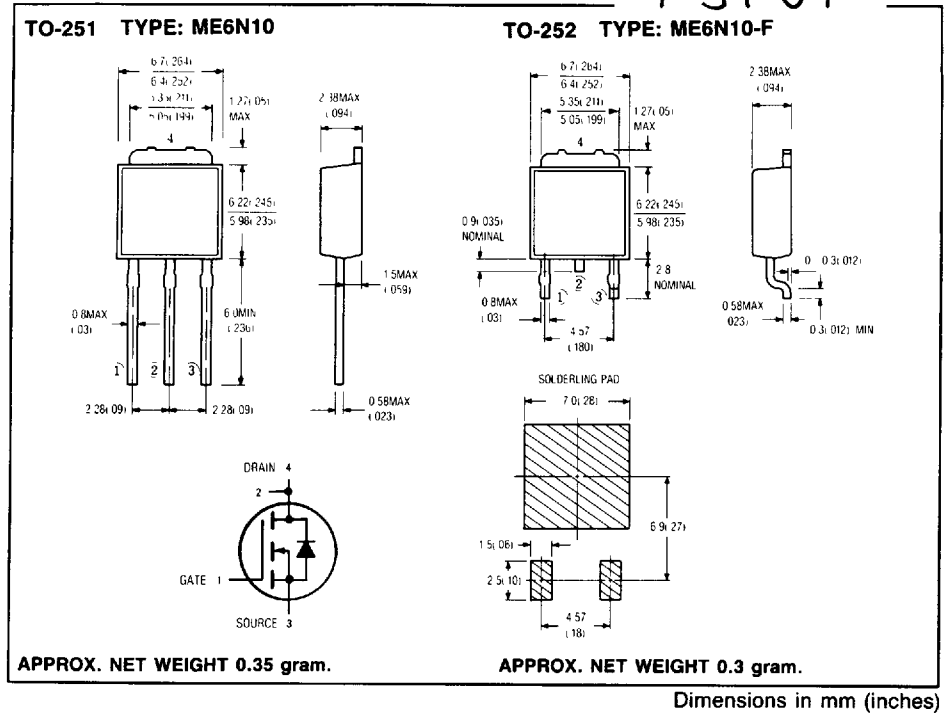


I_D	V_{DSS}	$R_{DS(on)}$
6A	100V	0.25 Ω

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}	$R_{GS} = 1M\Omega$	100	V
Gate-Source Voltage	V_{GS}	Continuous	± 20	V
	V_{GSM}	Non-repetitive ($t_p \leq 50 \mu s$)	± 40	V
Drain Current	I_D	Continuous	6	A
	I_{DM}	Pulsed	20	A
Total Power Dissipation	P_D	@ $T_C = 25^\circ C$ Derate above $25^\circ C$	20 0.16	W W/ $^\circ C$
		@ $T_A = 25^\circ C$ Derate above $25^\circ C$	1.25 0.01	W W/ $^\circ C$
		@ $T_A = 25^\circ C$ (1) Derate above $25^\circ C$	1.75 0.014	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_j, T_{stg}		-55 ~ +150	$^\circ C$

THERMAL CHARACTERISTICS

Thermal Resistance	R_{thJC}	Junction to Case	6.25	$^\circ C/W$
	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
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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
		$V_{DS} = 100V, V_{GS} = 0V, T_j = 125^\circ C$	—	—	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 0.25 mA$	2.0	—	4.5	V
		$V_{DS} = V_{GS}, I_D = 0.25 mA, T_j = 100^\circ C$	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
		$V_{GS} = 10V, I_D = 3A, T_j = 100^\circ C$	—	—	1.5	
Forward Transconductance	g_{FS}	$V_{DS} = 15V, I_D = 3A$	1.0	—	—	mhos

CAPACITANCES

Input Capacitance	C_{iss}	$V_{DS} = 25V$ $V_{GS} = 0V$ $f = 1 MHz$	—	—	600	μF
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}	$I_S = 6A, V_{GS} = 0V,$ $-di_S/dt = 100A/\mu s$	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

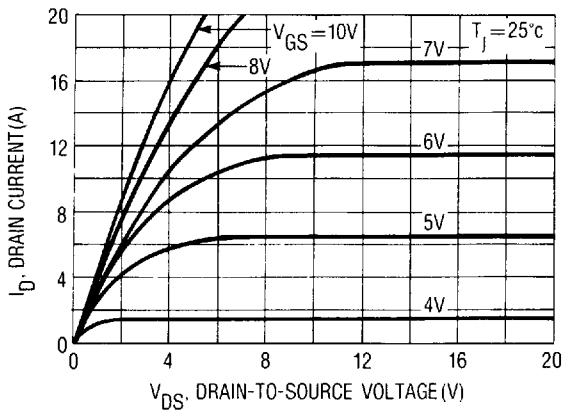


Fig. 2 - Typical Gate Threshold Voltage Variation With Junction Temperature

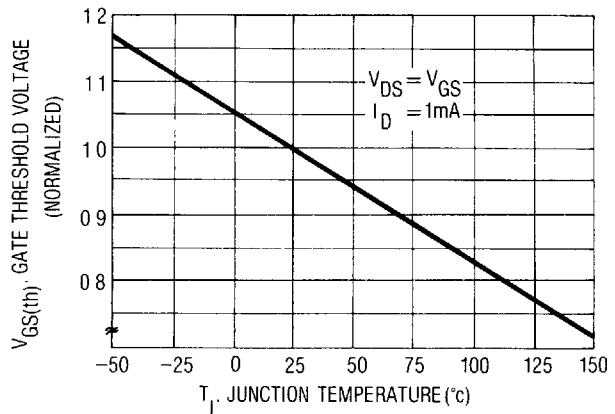


Fig. 3 - Typical Transfer Characteristics

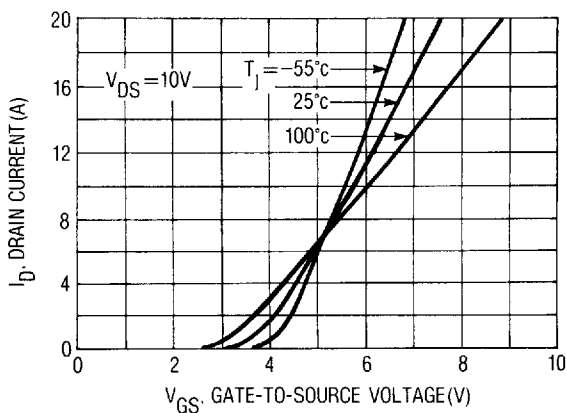


Fig. 4 - Typical Breakdown Voltage Variation With Junction Temperature

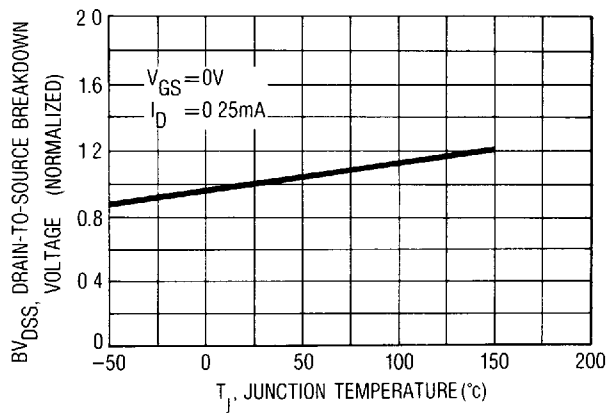


Fig. 5 - Typical On-Resistance Vs. Drain Current

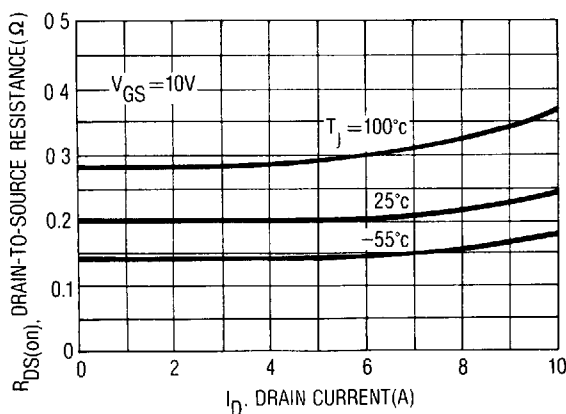


Fig. 6 - Typical On-Resistance Variation With Junction Temperature

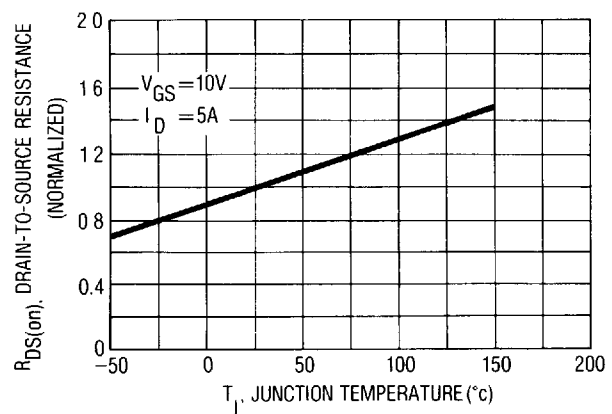


Fig. 7 - Maximum Rated Forward Biased Safe Operating Area

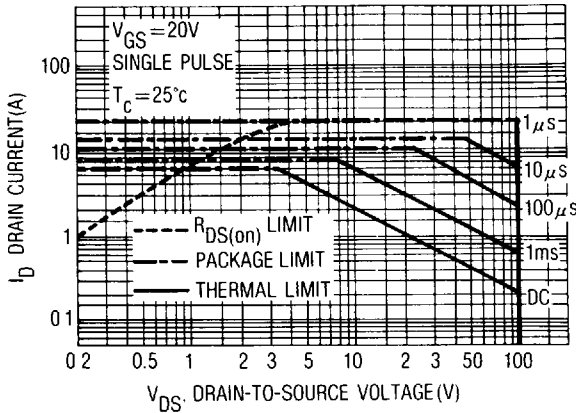


Fig. 8 - Maximum Rated Switching Safe Operating Area

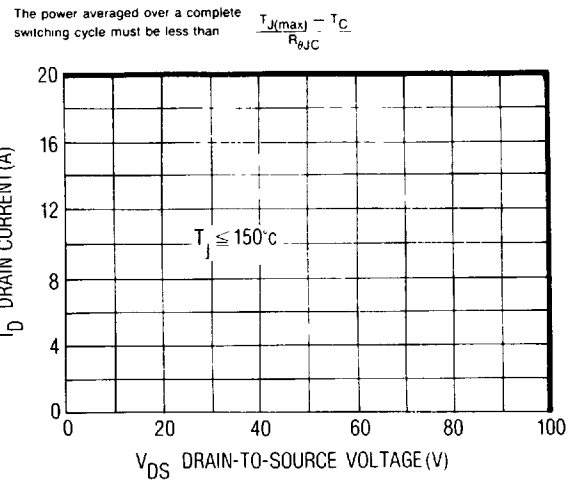


Fig. 9 - Thermal Response

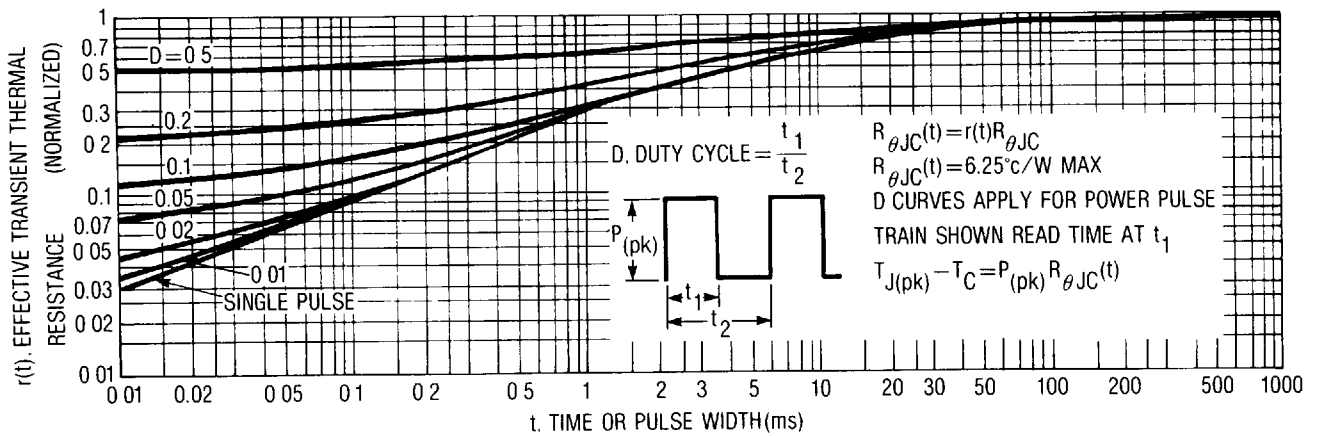


Fig. 10 - Typical Capacitance Variation With Voltage

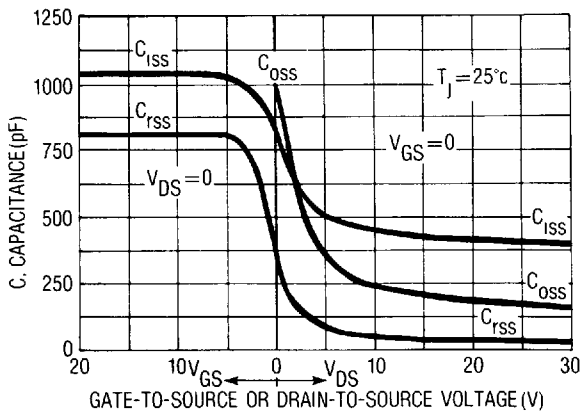


Fig. 11 - Typical Gate Charge Vs. Gate-to-Source Voltage

