

$V_{DS}=80V$

$R_{DS(ON)}, V_{GS}@10V, I_{DS}@40A = 11m\Omega$

### FEATURES

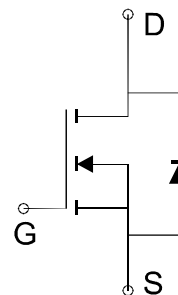
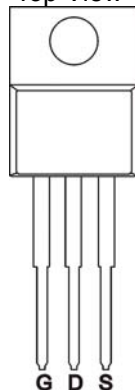
Minimize input capacitance and gate charge

Specially designed for DC/DC converters and DC motor control

### PIN CONFIGURATION

(TO-220)

Top View



Ordering Information: ME75N80ED (Pb-free)

ME75N80ED-G (Green product-Halogen free)

### Absolute Maximum Ratings ( $T_C=25^\circ C$ Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	80	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_C=25^\circ C$	75
		$T_C=100^\circ C$	60
Pulsed Drain Current <sup>a</sup>	$I_{DM}$	300	A
Source-drain Current	$I_{SD}$	75	A
Power Dissipation	$P_D$	$T_C=25^\circ C$	75
		$T_A=25^\circ C$	4
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 175	$^\circ C$
Avalanche Energy with Single Pulse <sup>b</sup>	$E_{AS}$	400	mJ
Thermal Resistance-Junction to Ambient*	$R_{\theta JA}$	$T \leq 10 \text{ sec}$	7.3
		Steady State	37
Thermal Resistance-Junction to Case	$R_{\theta JC}$	2	$^\circ C/W$

a. Pulse width limited by safe operating area

b. Starting  $T_J=25^\circ C$ ,  $I_D=30A$ ,  $V_{DD}=37.5V$

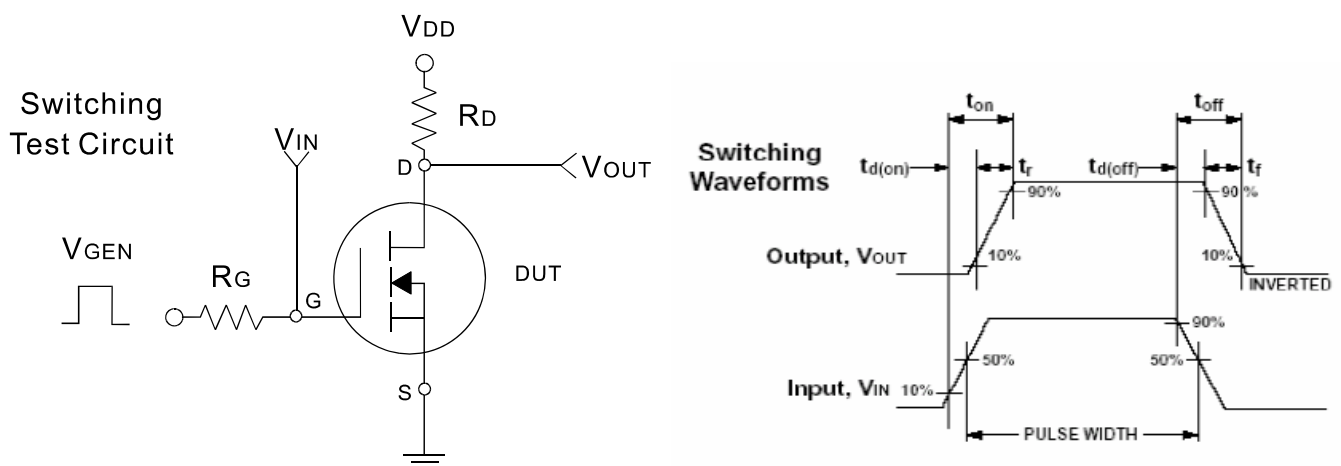
## N-Channel Enhancement Mode MOSFET

### Electrical Characteristics

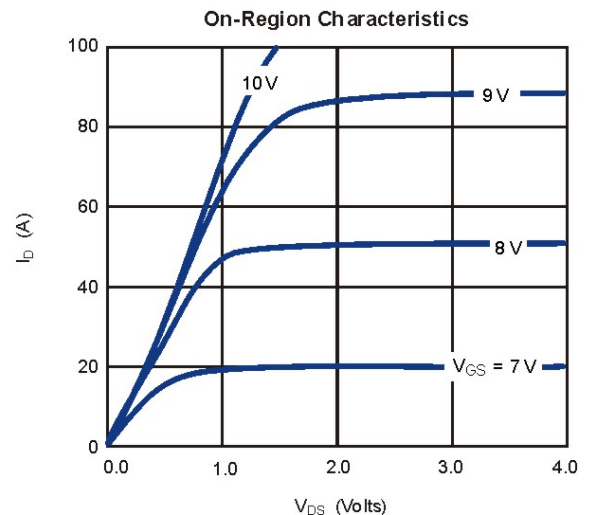
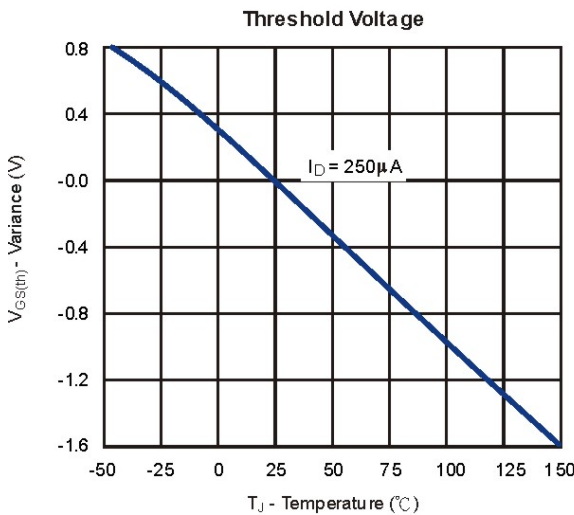
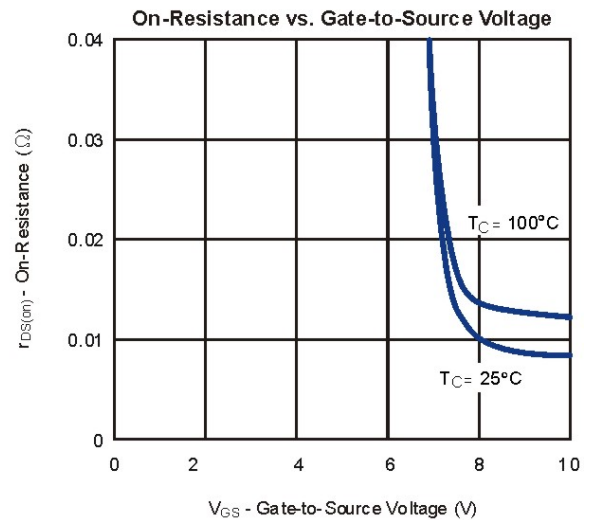
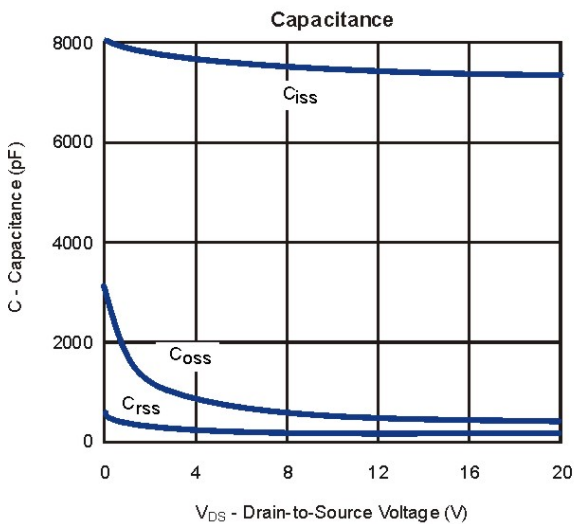
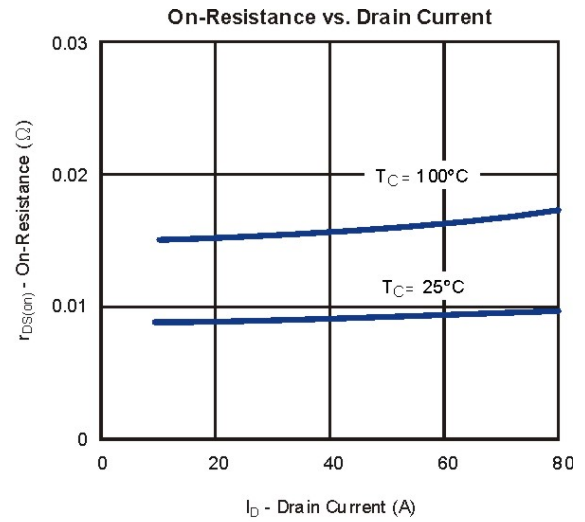
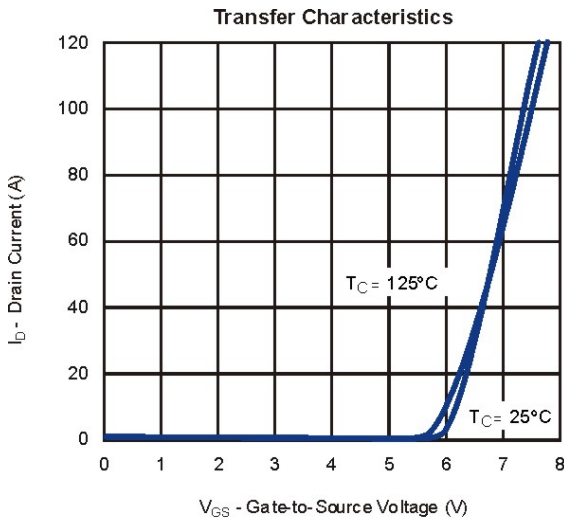
Symbol	Parameter	Limit	Min	Typ	Max	Unit
<b>STATIC</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μA	80			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	4.0		6.5	V
I <sub>GSS</sub>	Gate-Body Leakage	V <sub>GS</sub> =±20V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =Max Rating, V <sub>GS</sub> =0V			1	μA
R <sub>DS(ON)</sub>	Drain-Source On-Resistance*	V <sub>GS</sub> =10V, I <sub>D</sub> =40A		8.5	11	mΩ
G <sub>FS</sub>	Forward Transconductance*	V <sub>DS</sub> =15V, I <sub>D</sub> =40A		10		S
V <sub>SD</sub>	Diode Forward Voltage *	I <sub>SD</sub> =25A, V <sub>GS</sub> =0V			1.5	V
<b>DYNAMIC</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DD</sub> =60V, V <sub>GS</sub> =10V, I <sub>D</sub> =75A		120		nC
Q <sub>gs</sub>	Gate-Source Charge			54		
Q <sub>gd</sub>	Gate-Drain Charge			38		
R <sub>g</sub>	Gate Resistance	f=1MHz		2.3		Ω
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1MHz		7400		pF
C <sub>oss</sub>	Output Capacitance			450		
C <sub>rss</sub>	Reverse Transfer Capacitance			140		
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>GS</sub> =10V, R <sub>L</sub> =15Ω V <sub>DD</sub> =30V, R <sub>G</sub> =10Ω		80		ns
t <sub>r</sub>	Turn-On Rise Time			37		
t <sub>d(off)</sub>	Turn-Off Delay Time			140		
t <sub>f</sub>	Turn-Off Fall Time			27		

Notes: a. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%, Guaranteed by design, not subject to production testing.

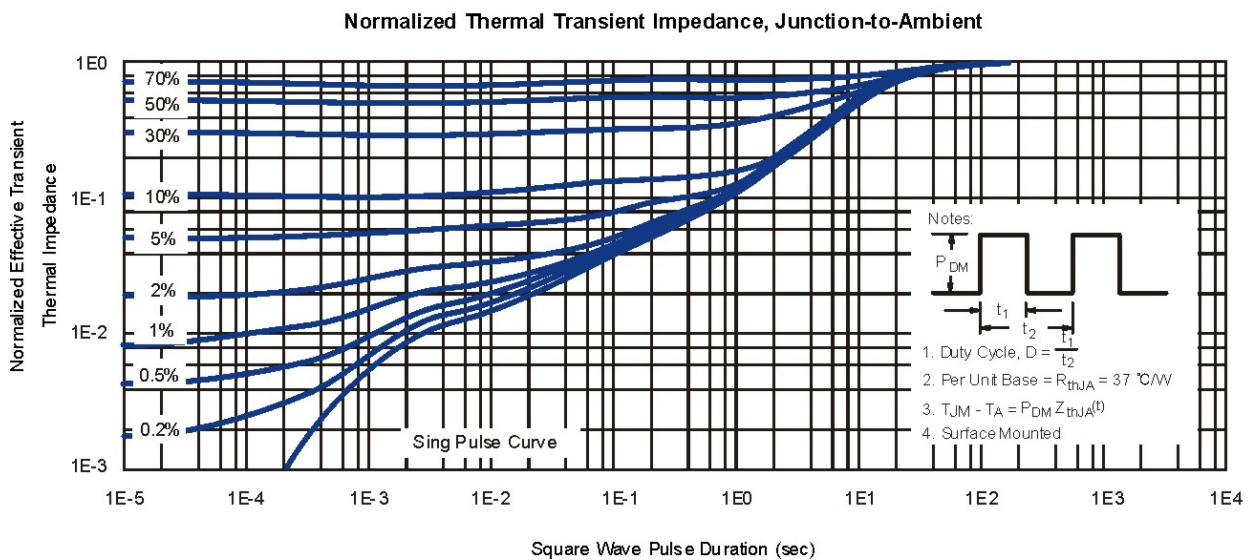
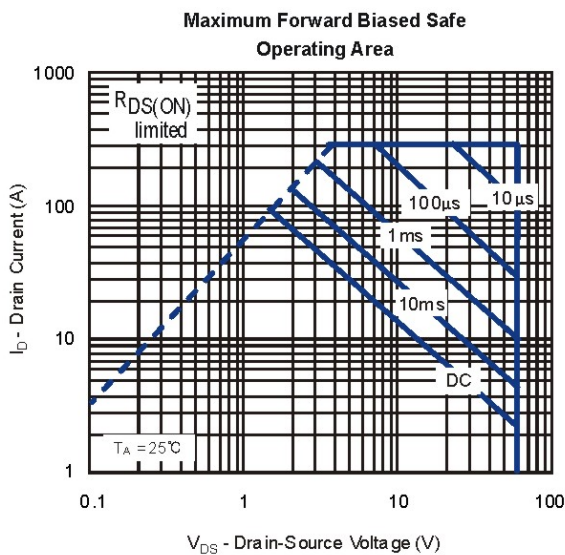
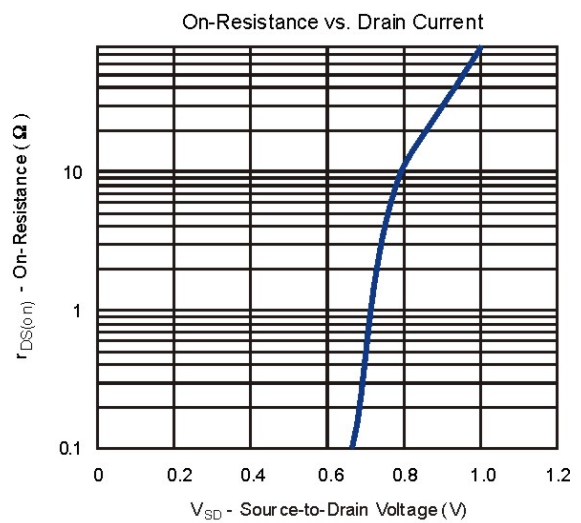
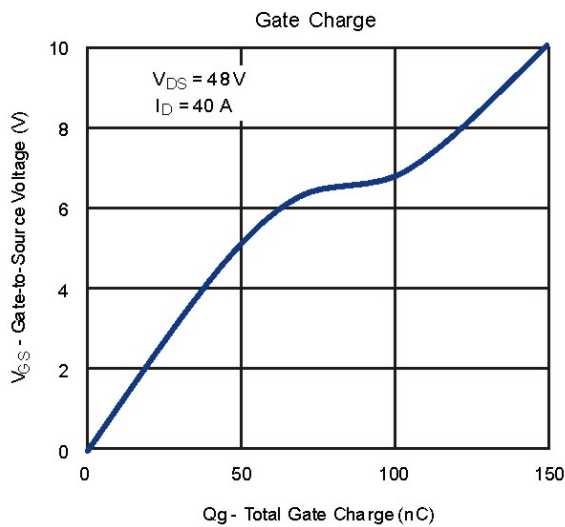
b. Matsuki reserves the right to improve product design, functions and reliability without notice.



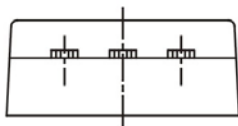
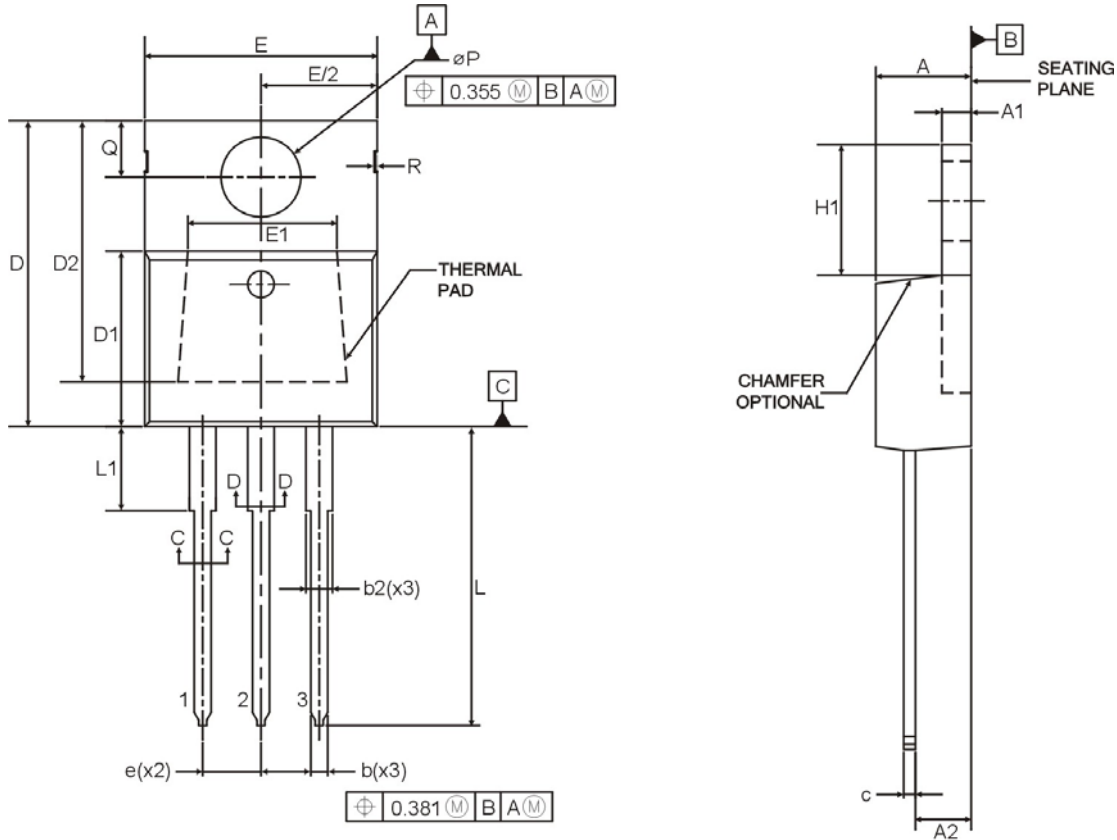
## Typical Characteristics (T<sub>J</sub> = 25°C Noted)



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**TO-220 Package Outline**



SYMBOL	MILLIMETERS (mm)	
	MIN	MAX
A	3.500	4.90
A1	1.000	1.40
A2	2.000	3.00
b	0.500	1.00
c	0.350	0.65
D	14.00	16.50
D1	8.382	9.017
D2	12.00	13.00
E	9.600	10.70
E1	6.858	8.890
e	2.540 BSC	
H1	5.500	7.50
L	12.50	15.00
$\phi P$	3.810	3.860
Q	2.540	3.048
b2	1.100	1.80
L1	-	7.00