

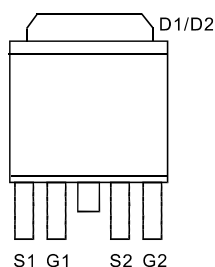
N- and P-Channel 40-V (D-S) MOSFET

GENERAL DESCRIPTION

The ME4565AD4 is the N and P-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching, and low in-line power loss are needed in a very small outline surface mount package.

PIN CONFIGURATION

(TO-252-4L)
Top View

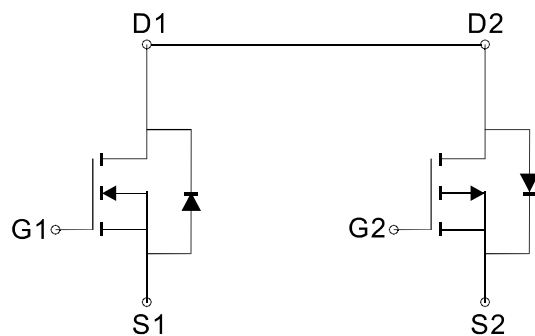


FEATURES

- R_{DS(ON)} 30mΩ@V_{GS}=10V (N-Ch)
- R_{DS(ON)} 58mΩ@V_{GS}=4.5V (N-Ch)
- R_{DS(ON)} 45mΩ@V_{GS}=-10V (P-Ch)
- R_{DS(ON)} 75mΩ@V_{GS}=-4.5V(P-Ch)
- Super high density cell design for extremely low R_{DS(ON)}
- Exceptional on-resistance and maximum DC current capability

APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- LCD Display inverter



N-Channel MOSFET

P-Channel MOSFET

Ordering Information: ME4565AD4 (Pb-free)

ME4565AD4-G (Green product-Halogen free)

Absolute Maximum Ratings (T_A=25 Unless Otherwise Noted)

Parameter		Symbol	N-Channel	P-Channel	Unit		
Drain-Source Voltage		V _{DSS}	40	-40	V		
Gate-Source Voltage		V _{GSS}	±25	±25	V		
Continuous Drain Current(T _J =150)*	T _C =25	I _D	22.1	-18.6	A		
	T _C =70		17.7	-14.9			
	T _A =25		7.4	-6.1			
	T _A =70		5.9	-5			
Pulsed Drain Current		I _{DM}	30	-30	A		
Maximum Power Dissipation	T _A =25	P _D	2.6	2.7	W		
	T _A =70		1.67	1.7			
Operating Junction Temperature		T _J	-55 to 150				
Thermal Resistance-Junction to Ambient*		R _{θJA}	Steady	48	Steady	46	/W
			10sec	20	10sec	18	
Thermal Resistance-Junction to Case*		R _{θJC}	5.3		5	/W	

*The device mounted on 1in² FR4 board with 2 oz copper

N- and P-Channel 40-V (D-S) MOSFET
Electrical Characteristics ($T_A=25$ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250 \mu A$ $V_{GS}=0V, I_D=250 \mu A$	N-Ch P-Ch	40 -40		V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250 \mu A$ $V_{DS}=V_{GS}, I_D=-250 \mu A$	N-Ch P-Ch	1 -1	3 -3	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 25V$ $V_{DS}=0V, V_{GS}=\pm 25V$	N-Ch P-Ch		± 100 ± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$ $V_{DS}=-40V, V_{GS}=0V$	N-Ch P-Ch		1 -1	μA
		$V_{DS}=40V, V_{GS}=0V, T_J=55$ $V_{DS}=-40V, V_{GS}=0V, T_J=55$	N-Ch P-Ch		10 -10	
$R_{DS(ON)}$	Drain-Source On-State Resistance ^a	$V_{GS}=10V, I_D=7A$ $V_{GS}=-10V, I_D=-7A$	N-Ch P-Ch		23 36	m
		$V_{GS}=4.5V, I_D=6A$ $V_{GS}=-4.5V, I_D=-6A$	N-Ch P-Ch		42 58	
V_{SD}	Diode Forward Voltage	$I_S=1.7A, V_{GS}=0V$ $I_S=-1.7A, V_{GS}=0V$	N-Ch P-Ch		0.7 -0.7	V
DYNAMIC						
Q_g	Total Gate Charge	N-Channel $V_{DS}=20V, V_{GS}=4.5V, I_D=7A$ P-Channel $V_{DS}=-20V, V_{GS}=-4.5V, I_D=-7A$	N-Ch P-Ch		8 10	nC
Q_{gs}	Gate-Source Charge		N-Ch P-Ch		4 4.3	
Q_{gd}	Gate-Drain Charge		N-Ch P-Ch		4 4.5	
R_g	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$ $V_{GS}=0V, V_{DS}=0V, f=1MHz$	N-Ch P-Ch		0.7 6	
C_{iss}	Input capacitance	N-Channel $V_{DS}=20V, V_{GS}=0V, F=1MHz$ P-Channel $V_{DS}=-20V, V_{GS}=0V, F=1MHz$	N-Ch P-Ch		560 860	pF
C_{oss}	Output Capacitance		N-Ch P-Ch		72 120	
C_{rss}	Reverse Transfer Capacitance		N-Ch P-Ch		18 35	
$t_{d(on)}$	Turn-On Delay Time	N-Channel $V_{DD}=15V, R_L=15$ $I_D=1A, V_{GEN}=10V, R_G=6$ P-Channel $V_{DD}=-15V, R_L=15$ $I_D=-1A, V_{GEN}=-10V, R_G=6$	N-Ch P-Ch		11 30	ns
t_r	Turn-On Rise Time		N-Ch P-Ch		13 8.5	
$t_{d(off)}$	Turn-Off Delay Time		N-Ch P-Ch		37 70	
t_f	Turn-On Fall Time		N-Ch P-Ch		3.5 7	

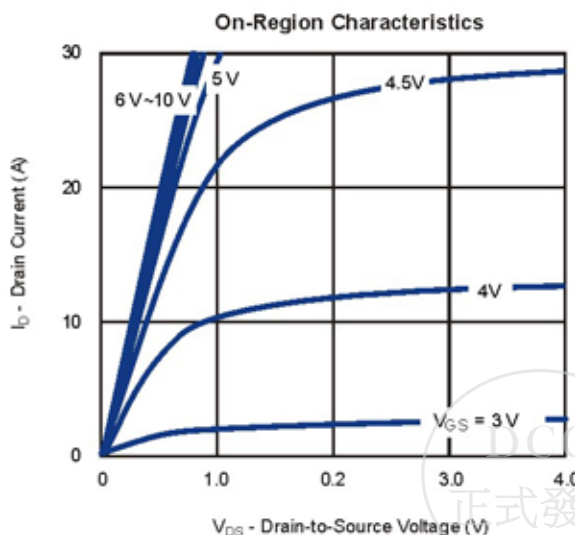
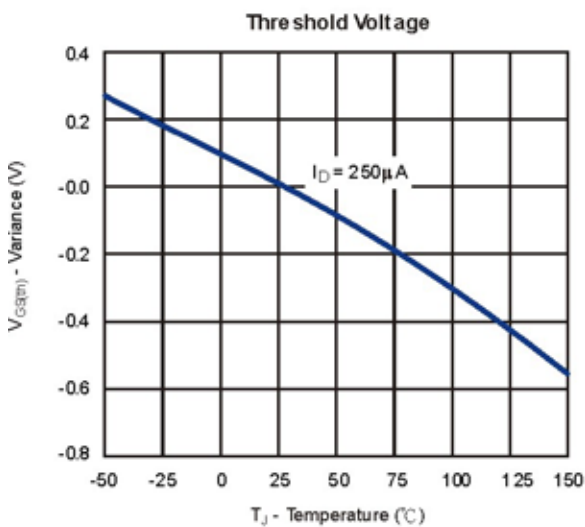
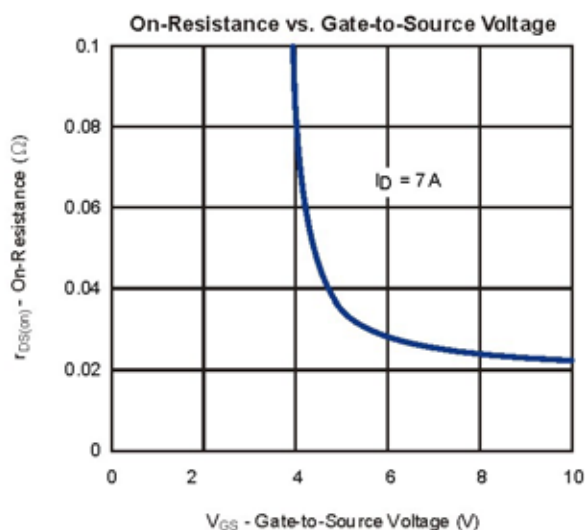
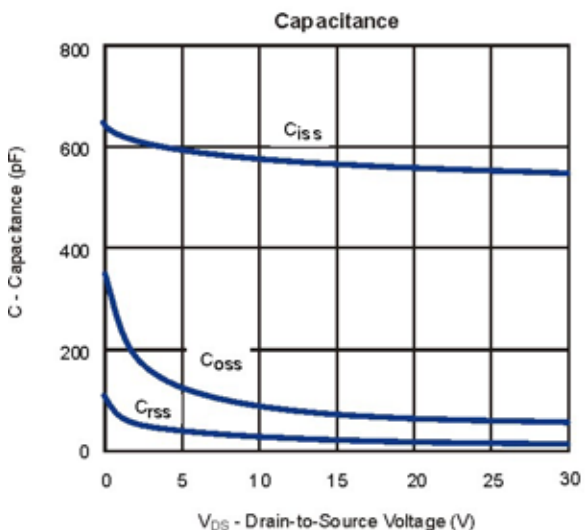
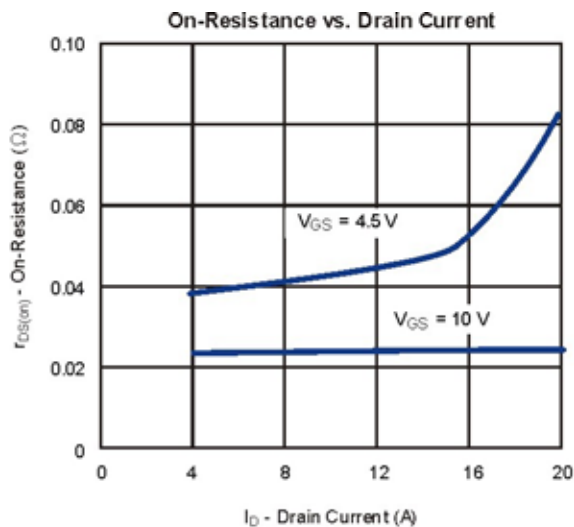
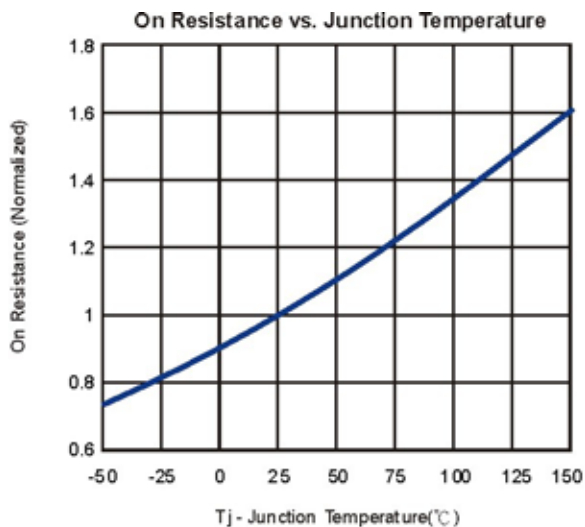
Notes: a. Pulse test; pulse width 300us, duty cycle 2%



N- and P-Channel 40-V (D-S) MOSFET

Typical Characteristics (T_J =25 Noted)

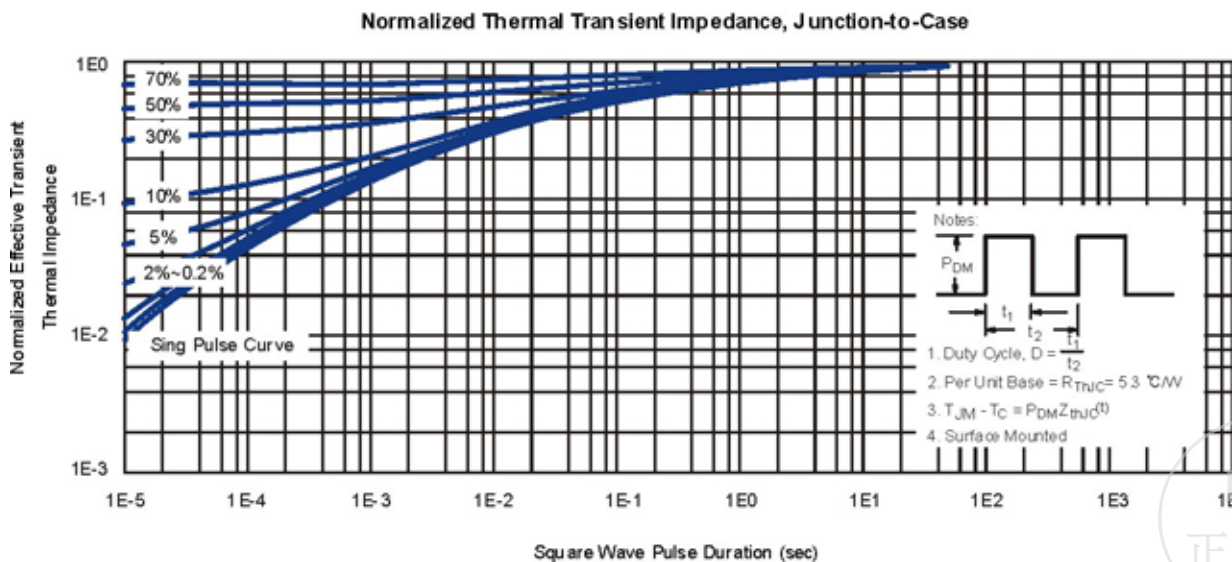
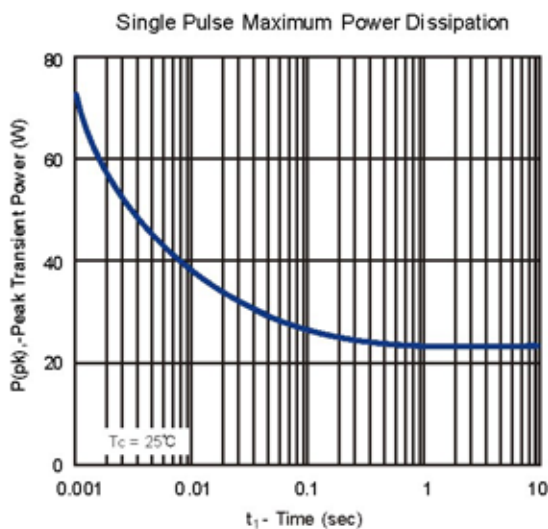
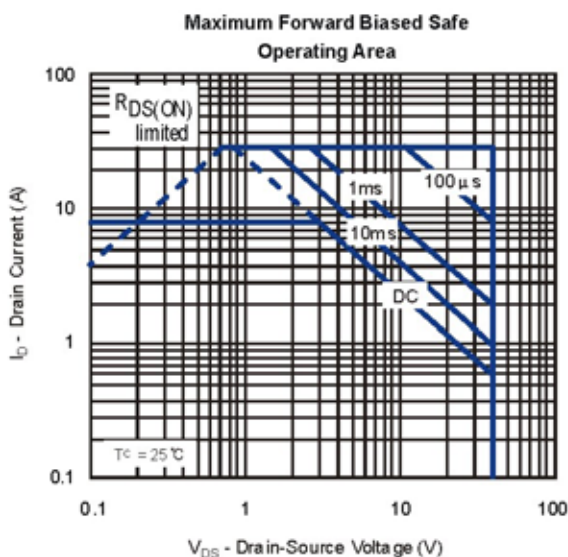
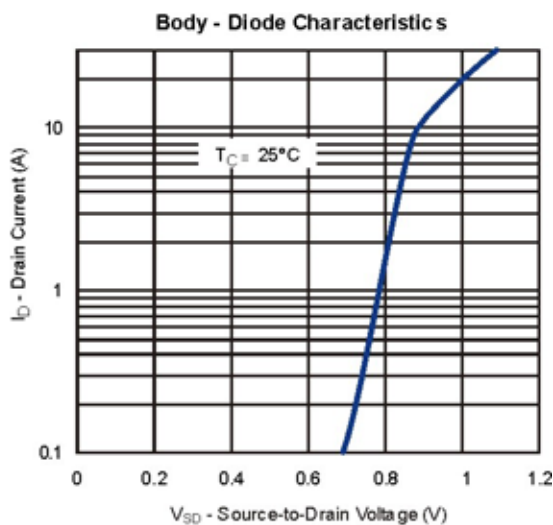
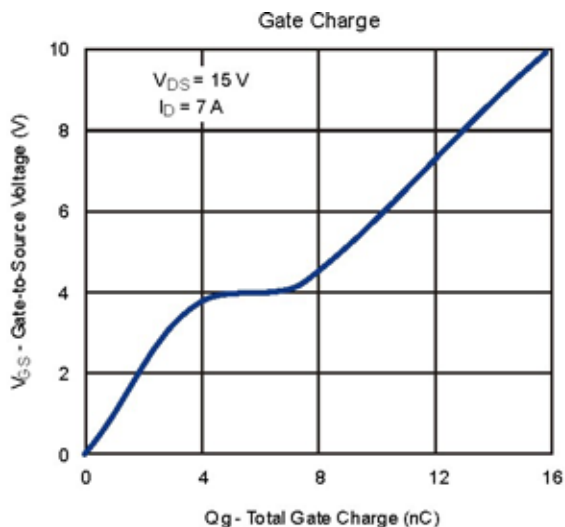
N-CHANNEL



N- and P-Channel 40-V (D-S) MOSFET

Typical Characteristics (T_J = 25 °C Noted)

N-CHANNEL

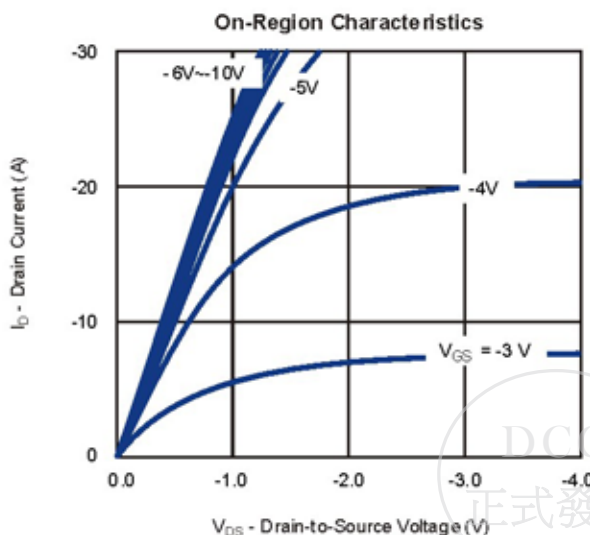
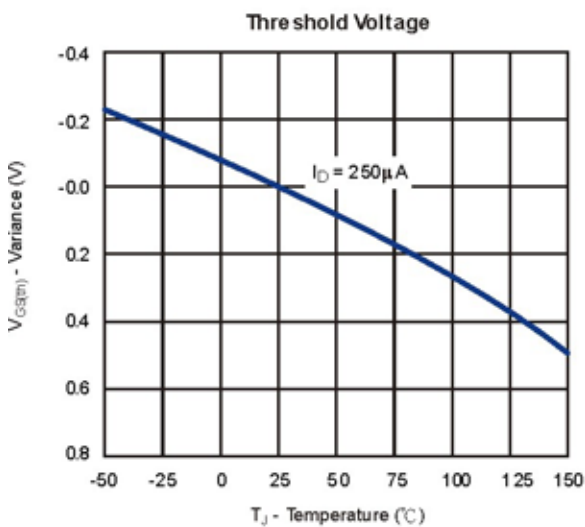
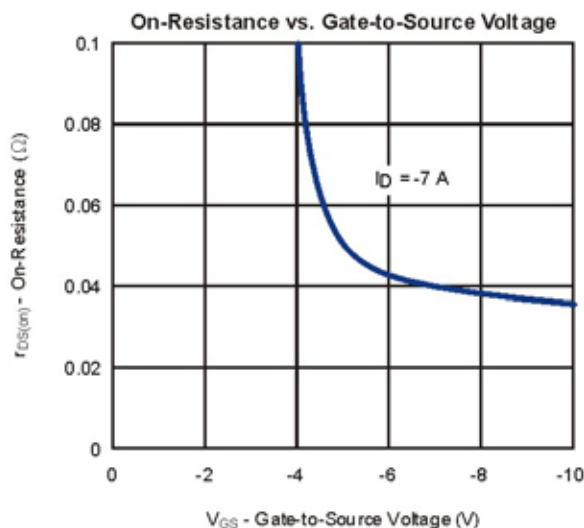
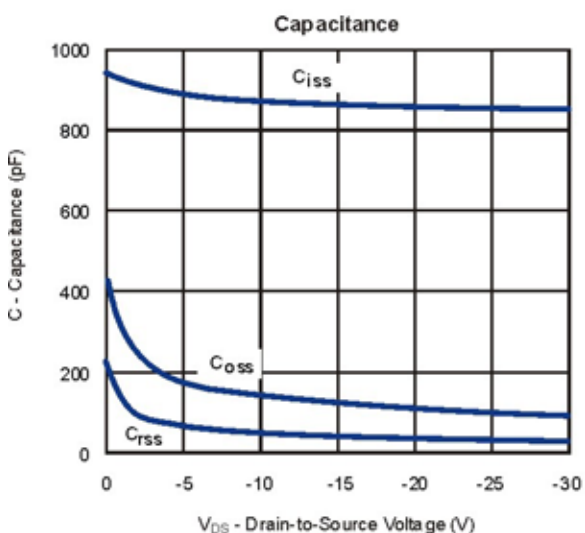
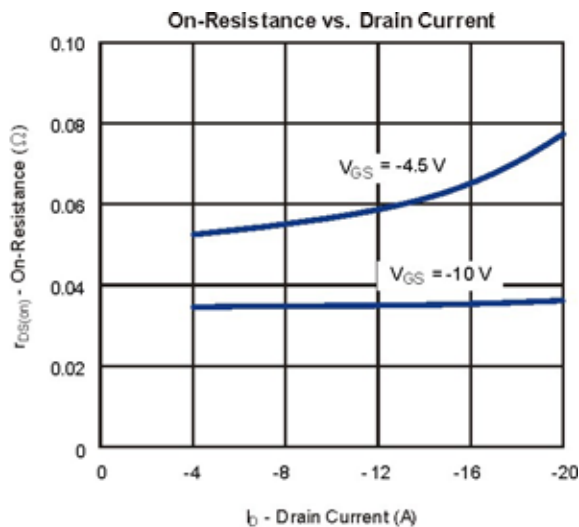
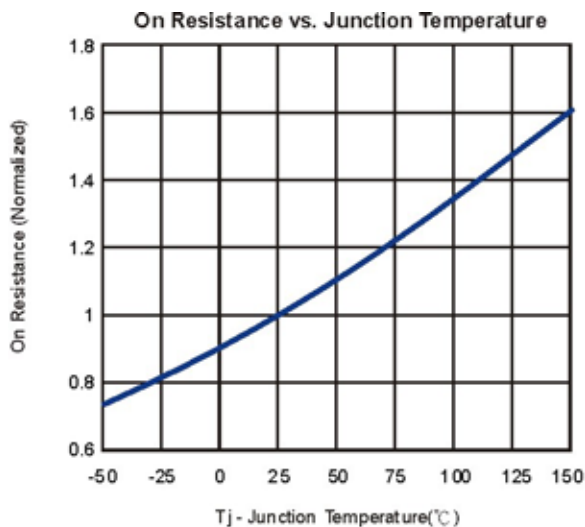


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N- and P-Channel 40-V (D-S) MOSFET

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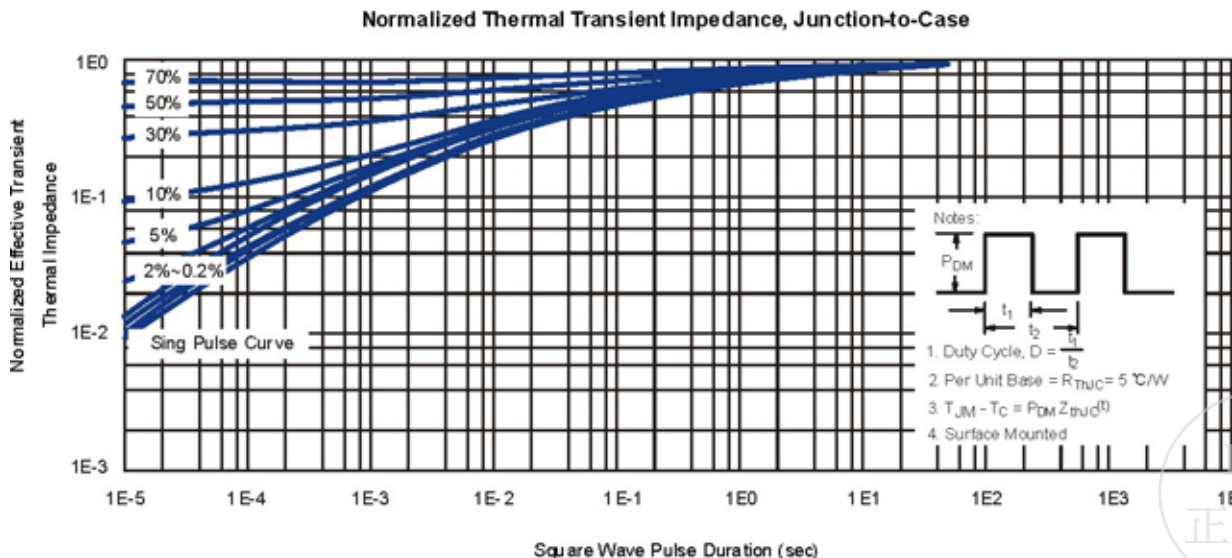
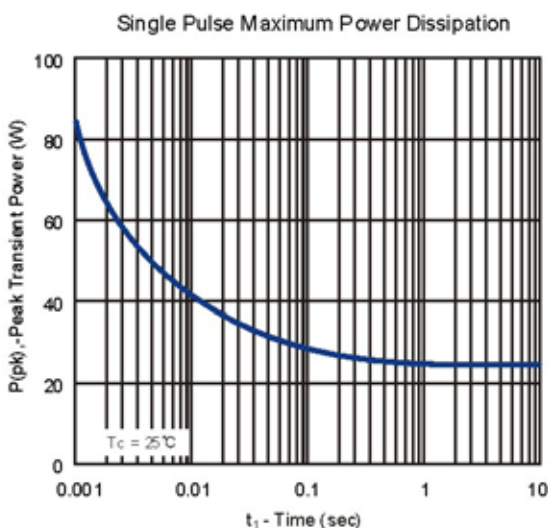
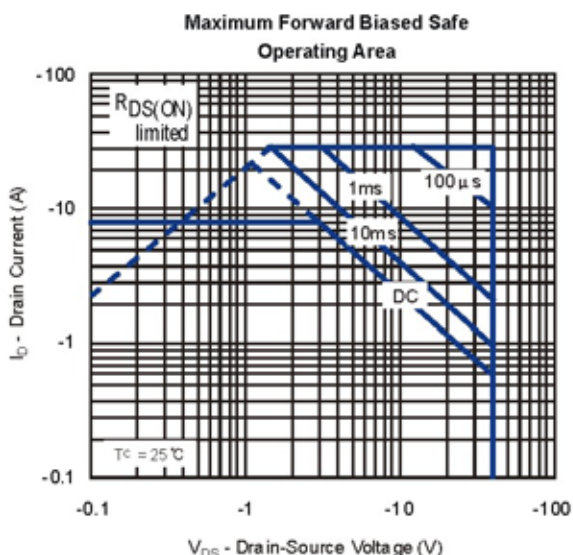
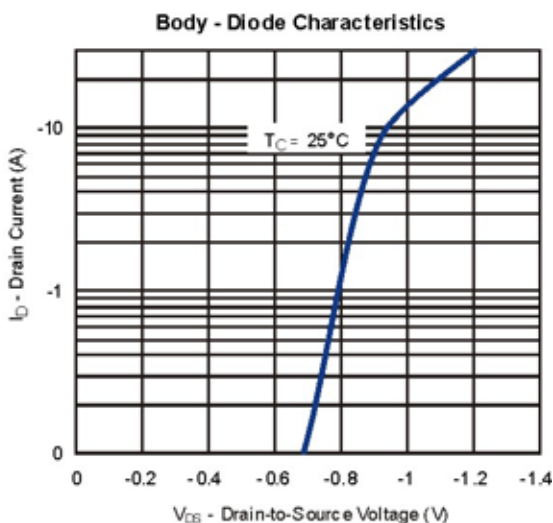
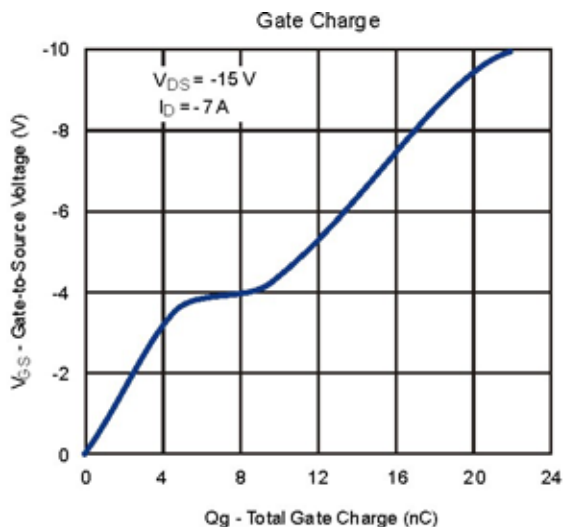
P-CHANNEL



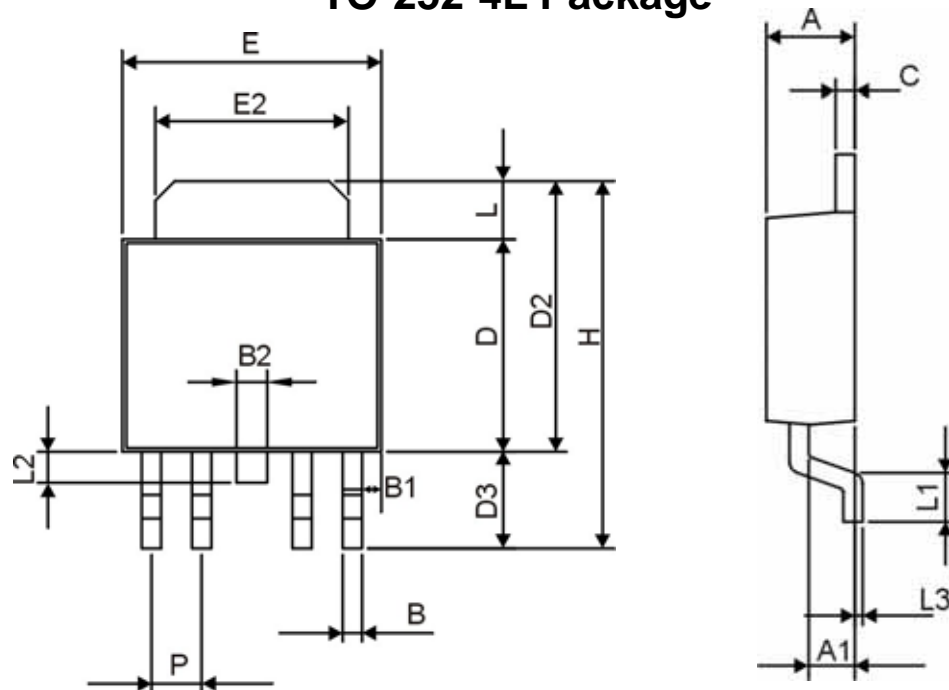
N- and P-Channel 40-V (D-S) MOSFET

Typical Characteristics (T_J = 25°C Noted)

P-CHANNEL



TO-252-4L Package



DIM	MILLIMETERS (mm)	
	MIN	MAX
A	2.20	2.50
A1	1.10	1.30
B	0.30	0.75
B1	0.55	0.75
B2	0.40	0.80
C	0.40	0.60
D	5.20	5.70
D2	6.50	7.30
D3	2.20	3.00
E	6.30	6.70
E2	4.50	5.50
H	9.50	10.50
L	1.30	1.70
L1	0.90	1.70
L2	0.50	1.10
L3	0.00	0.30
P	1.20	1.40

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