



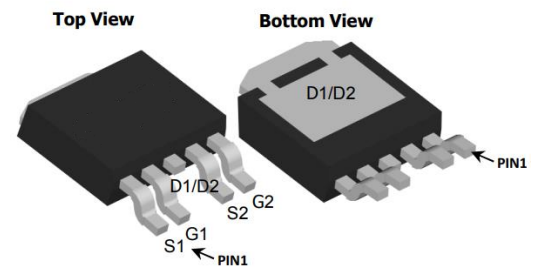
PJM20C60TM

N and P-Channel Complementary Power MOSFET

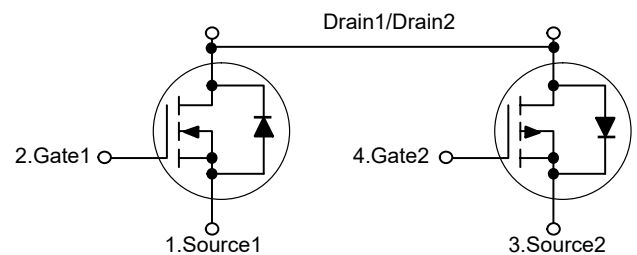
Features

- N-Channel**
 $V_{DS}=60V, I_D=25A$
 $R_{DS(on)} < 40m\Omega @ V_{GS}=10V$
 $R_{DS(on)} < 60m\Omega @ V_{GS}=4.5V$
- P-Channel**
 $V_{DS}=-60V, I_D=-19A$
 $R_{DS(on)} < 90m\Omega @ V_{GS}=-10V$
 $R_{DS(on)} < 100m\Omega @ V_{GS}=-4.5V$
- Advanced trench technology to provide excellent $R_{DS(on)}$

TO-252-4L



Schematic Diagram



Applications

- Motor Drive Applications
- Networking
- Half/Full Bridge Topology

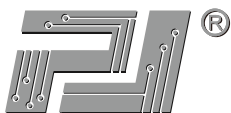
Absolute Maximum Ratings

Ratings at 25°C Junction temperature unless otherwise specified.

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	60	-60	V
Gate-Source Voltage	V_{GS}	±20		V
Drain Current-Continuous at $V_{GS}=10V$ ^{Note1}	I_D	25	-19	A
Drain Current-Pulsed ^{Note2}	I_{DM}	60	-30	A
Single Pulse Avalanche Energy ^{Note3}	E_{AS}	22	29.8	mJ
Avalanche Current	I_{AS}	21	-19	A
Maximum Power Dissipation ^{Note4}	P_D	50	50	W
Junction Temperature	T_J	175		°C
Storage Temperature Range	T_{STG}	-55 to +175		°C

Thermal Characteristics

Thermal Resistance, Junction-to-Ambient ^{Note2}	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case ^{Note2}	$R_{\theta JC}$	3	°C/W

**N-Channel****Electrical Characteristics**(T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60	65	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =48V, V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note2}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.75	2.5	V
Drain-Source On-Resistance ^{Note2}	R _{DS(on)}	V _{GS} =10V, I _D =5A	--	32	40	mΩ
		V _{GS} =4.5V, I _D =4A	--	48	60	mΩ
Forward Transconductance ^{Note2}	g _{FS}	V _{DS} =5V, I _D =4A	--	28	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	--	1027	--	pF
Output Capacitance	C _{oss}		--	65	--	pF
Reverse Transfer Capacitance	C _{rss}		--	45	--	pF
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, I _D =4A V _{GS} =10V, R _G =3.3Ω	--	3	--	nS
Turn-on Rise Time	t _r		--	34	--	nS
Turn-off Delay Time	t _{d(off)}		--	23	--	nS
Turn-off Fall Time	t _f		--	6	--	nS
Total Gate Charge	Q _g	V _{DS} =48V, I _D =4A, V _{GS} =4.5V	--	19	--	nC
Gate-Source Charge	Q _{gs}		--	2.6	--	nC
Gate-Drain Charge	Q _{gd}		--	4.1	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note2}	V _{SD}	V _{GS} =0V, I _S =1A	--	--	1.2	V
Diode Forward Current ^{Note1,5}	I _S		--	--	2.5	A

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The E_{AS} data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=21A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.



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N and P-Channel Complementary Power MOSFET

P-Channel

Electrical Characteristics

($T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$-V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	60	65	--	V
Zero Gate Voltage Drain Current	$-I_{DSS}$	$V_{DS}=-48V, V_{GS}=0V$	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage ^{Note2}	$-V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	1.2	1.75	2.5	V
Drain-Source On-Resistance ^{Note2}	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-3A$	--	70	90	$m\Omega$
		$V_{GS}=-4.5V, I_D=-2A$	--	88	100	$m\Omega$
Forward Transconductance ^{Note2}	g_{FS}	$V_{DS}=-5V, I_D=-3A$	--	8.5	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$	--	1137	--	pF
Output Capacitance	C_{oss}		--	76	--	pF
Reverse Transfer Capacitance	C_{rss}		--	50	--	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-1A$ $V_{GS}=-10V, R_G=3.3\Omega$	--	9.2	--	nS
Turn-on Rise Time	t_r		--	20.1	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	46.7	--	nS
Turn-off Fall Time	t_f		--	9.4	--	nS
Total Gate Charge	Q_g	$V_{DS}=-48V, I_D=-3A, V_{GS}=-4.5V$	--	12.1	--	nC
Gate-Source Charge	Q_{gs}		--	2.2	--	nC
Gate-Drain Charge	Q_{gd}		--	6.3	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note2}	$-V_{SD}$	$V_{GS}=0V, I_S=-1A$	--	--	1.2	V
Diode Forward Current ^{Note1,5}	$-I_S$		--	--	2.5	A

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The E_{AS} data shows Max. rating . The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-19A$
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

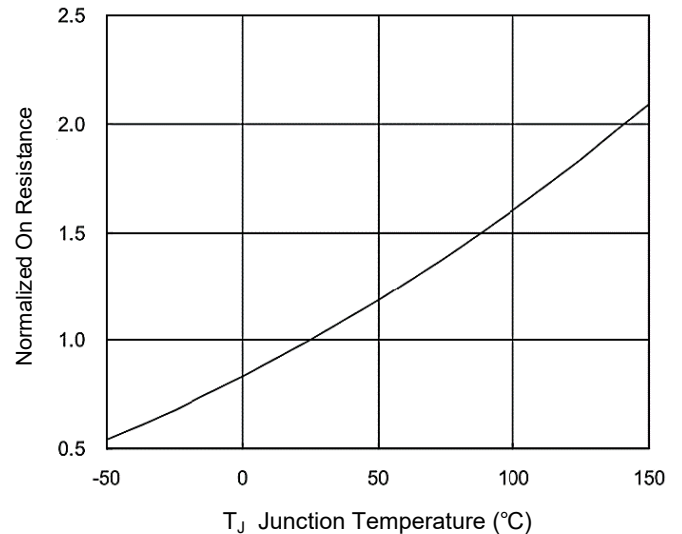
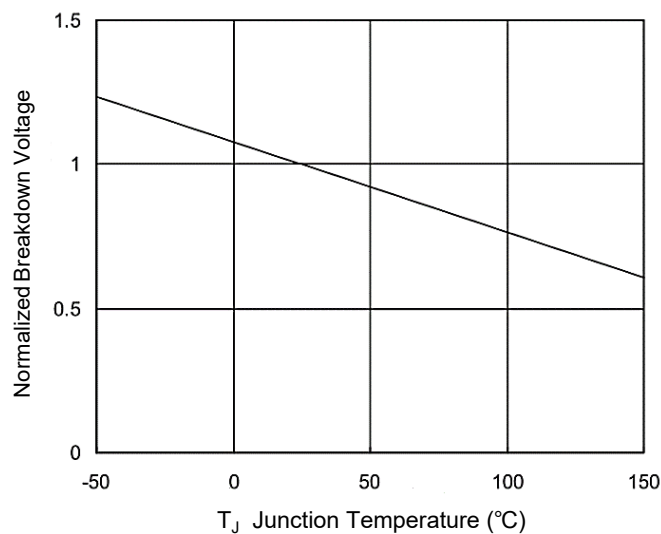
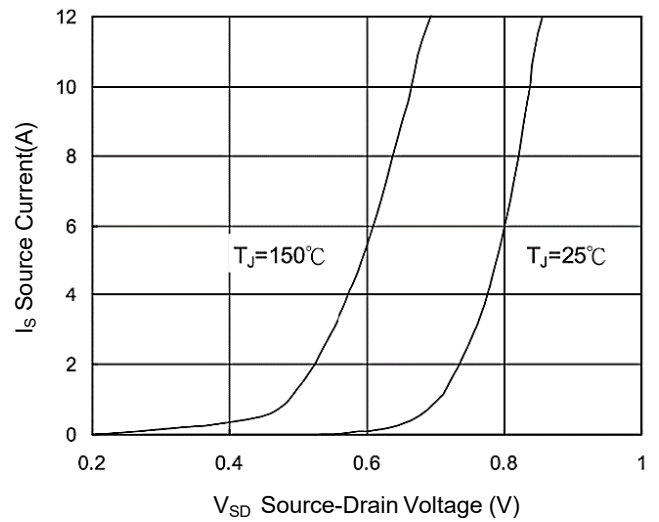
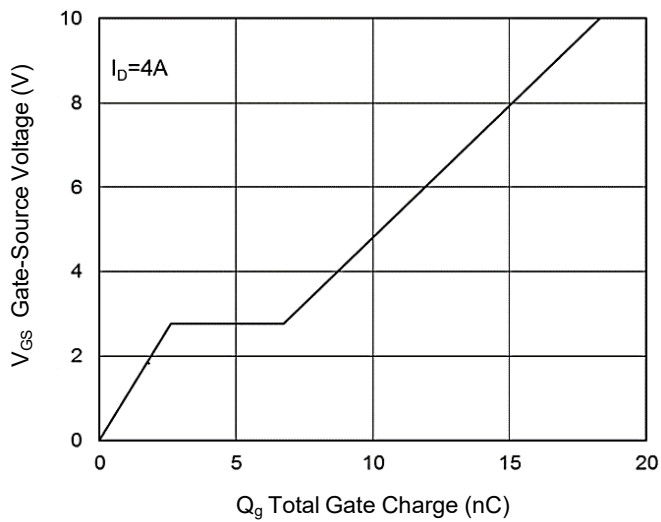
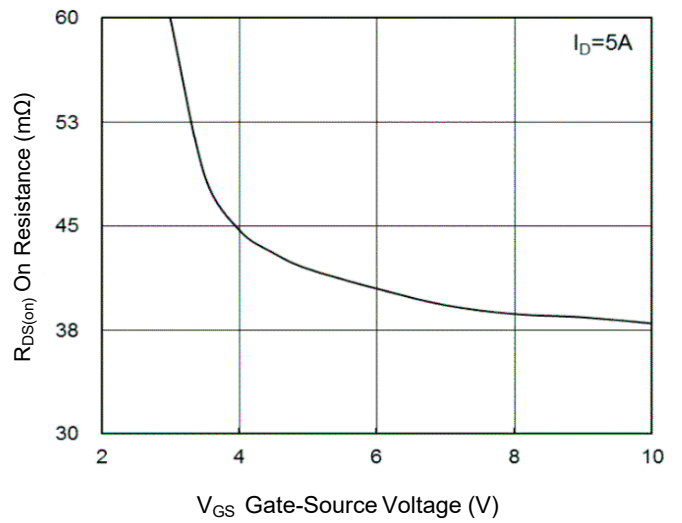
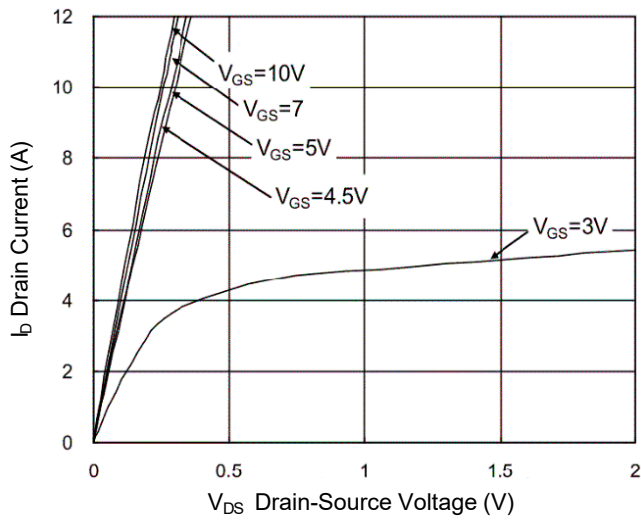


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N-Channel

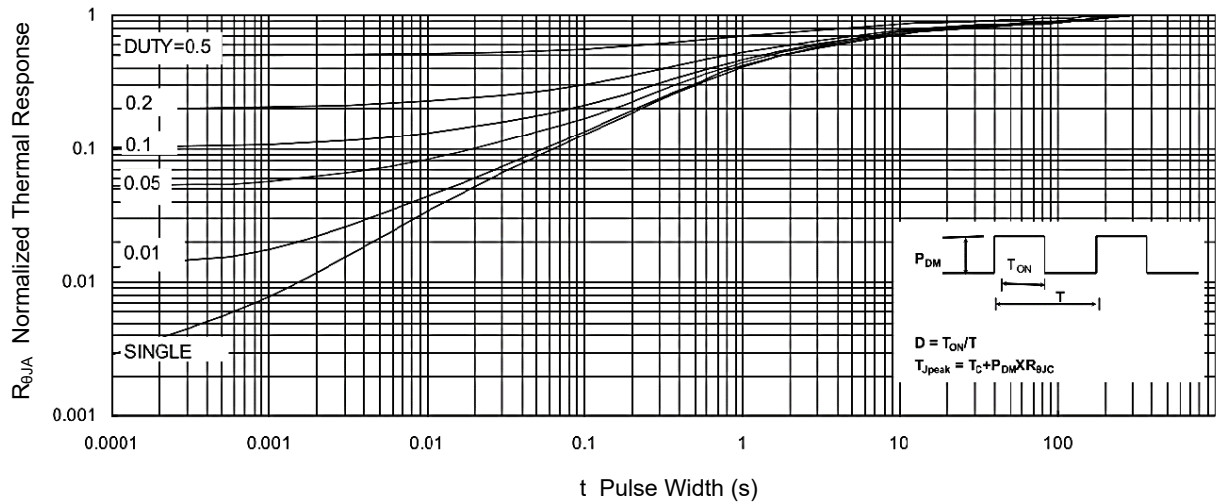
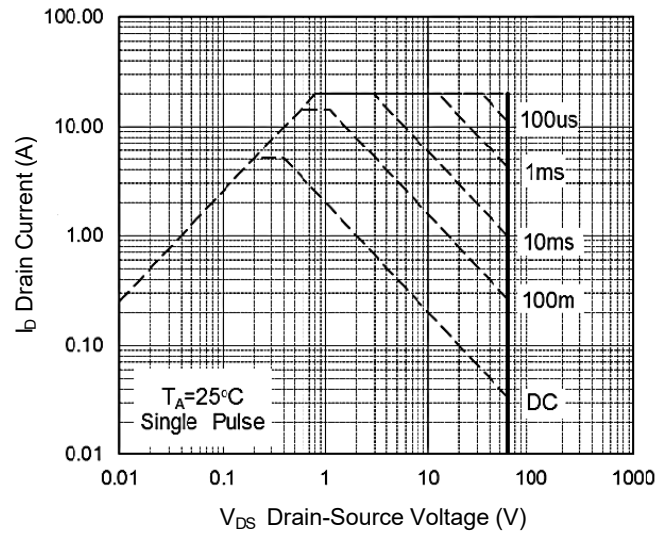
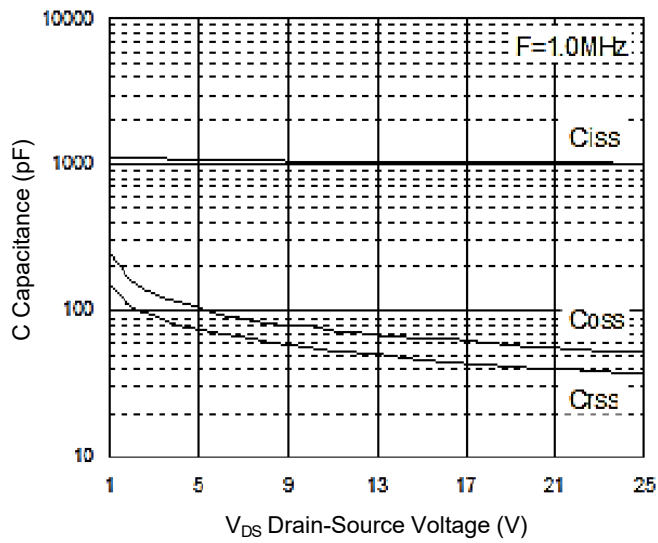
Typical Characteristics Curves





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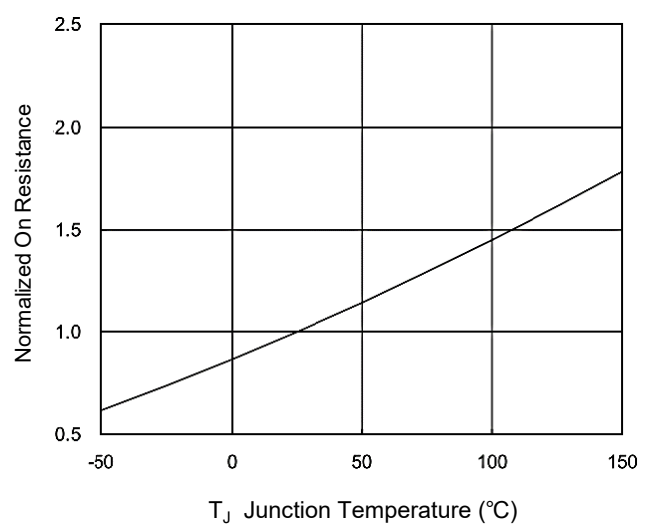
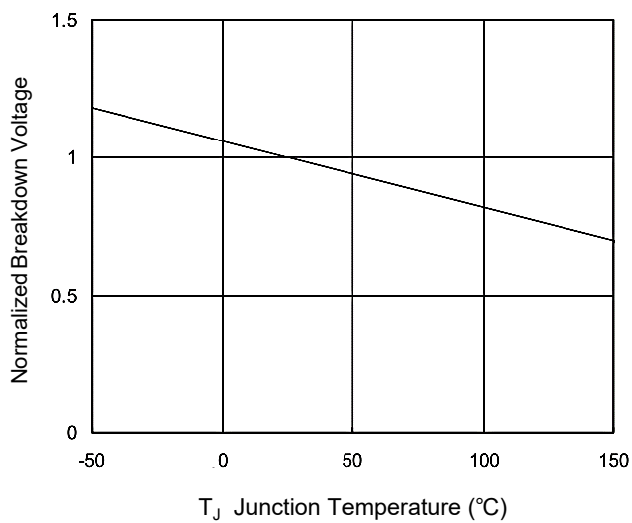
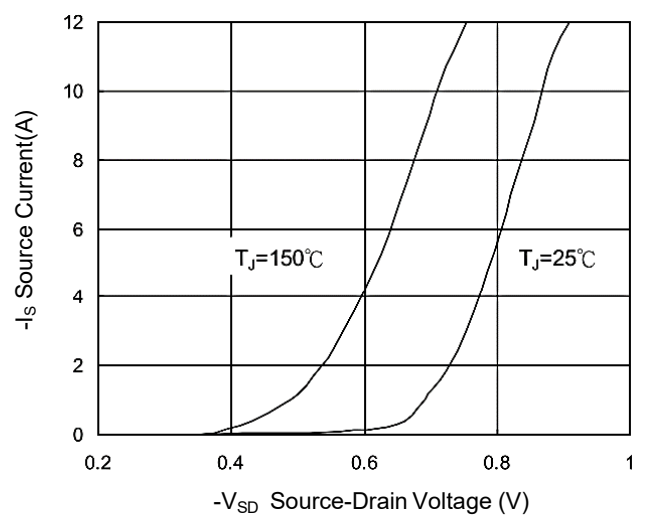
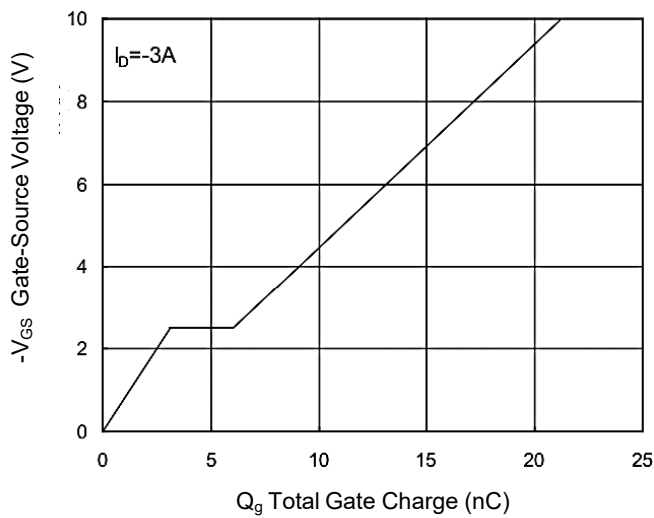
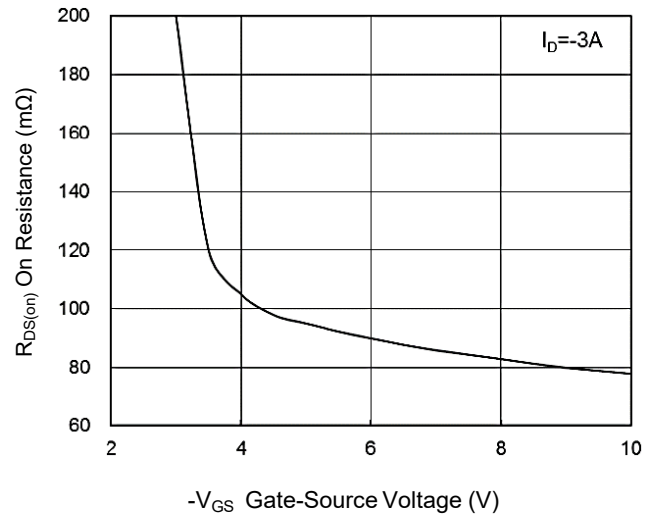
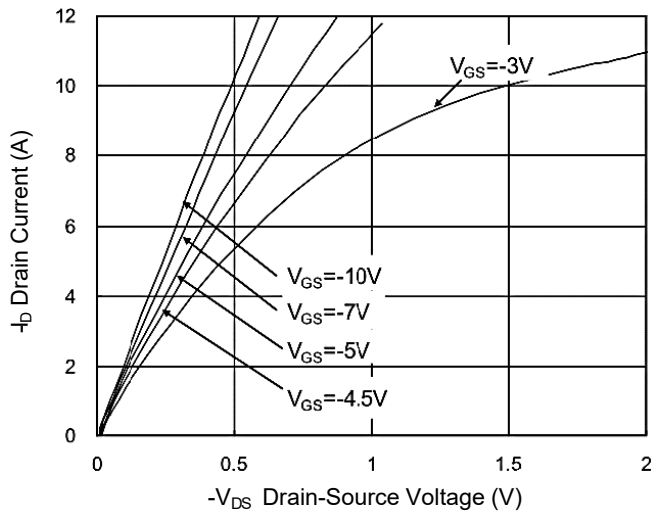


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P-Channel

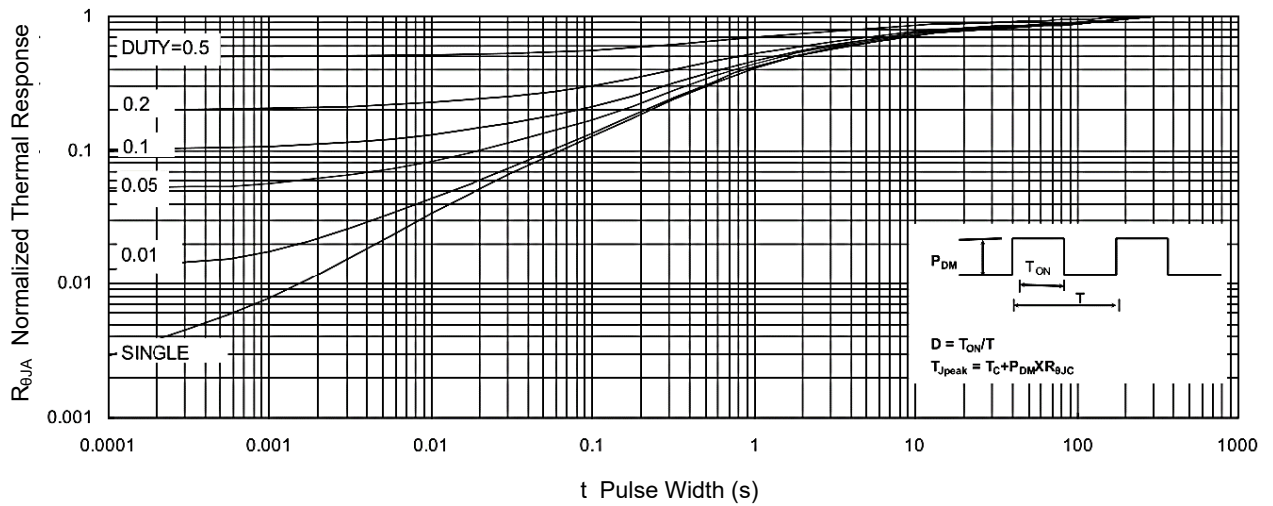
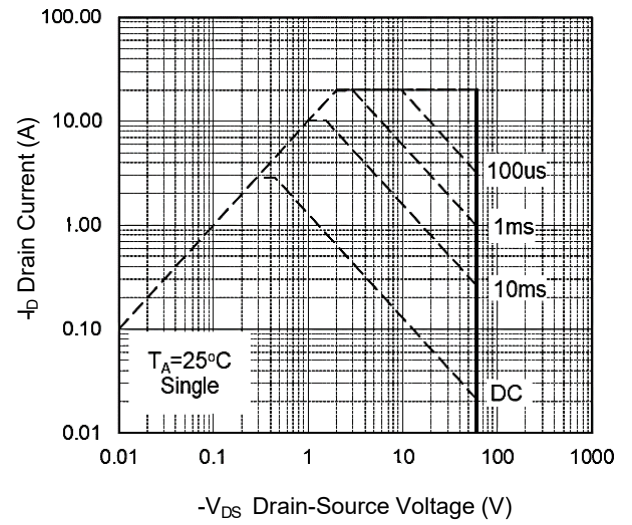
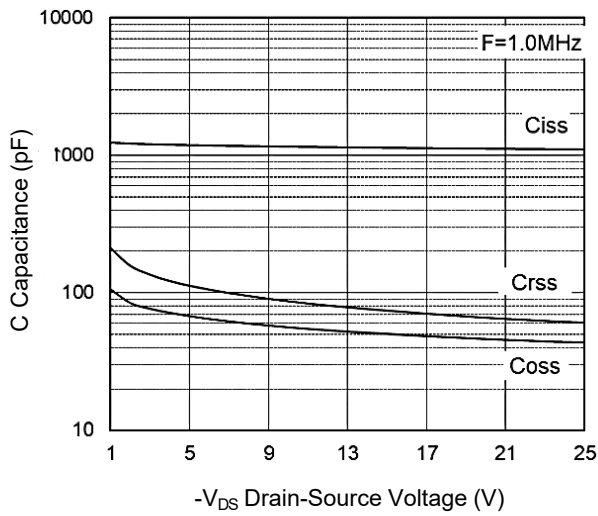
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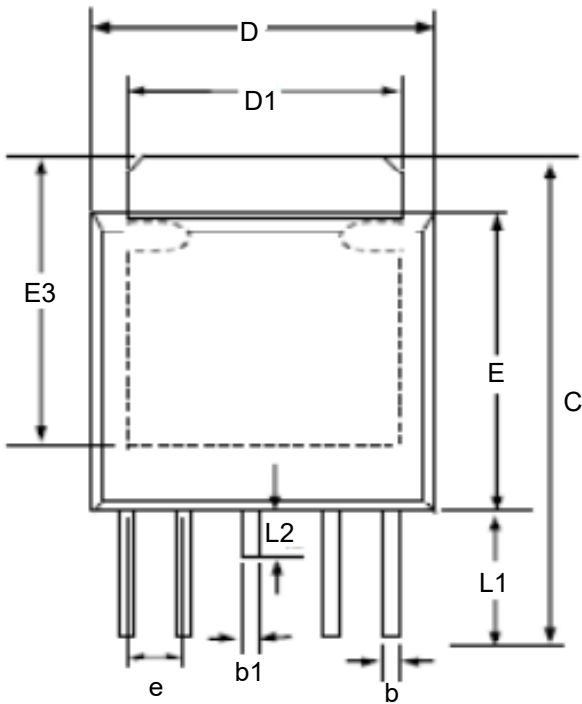
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Package Outline

TO-252-4L

Dimensions in mm



Symbol	Millimeters		
	Min.	Typ.	Max.
D	6.30	6.55	6.80
D1	4.80	5.35	5.90
C	9.30	9.75	10.20
E	5.30	5.80	6.30
E3	4.50	5.15	5.80
L	0.90	1.35	1.80
L1	2.00	2.53	3.05
L2	0.50	0.85	1.20
b	0.30	0.50	0.70
b1	0.40	0.60	0.80
A	2.10	2.30	2.50
A2	0.40	0.53	0.65
A1	0.00	0.10	0.20
e	1.20	1.30	1.40

