Maximum Ratings – N-CHANNEL, Q1 @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	35	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 4) V_{GS} = 10V	Steady State	T_A = 25°C T_A = 70°C	I_D	5.3 4.2	A
Continuous Drain Current (Note 5) V_{GS} = 10V	Steady State	T_A = 25°C T_A = 70°C	I_D	8.6 6.8	A
Continuous Drain Current (Note 5) V_{GS} = 10V	t ≤ 10s	T_A = 25°C T_A = 70°C	I_D	13 11	A
Continuous Drain Current (Note 5) V_{GS} = 4.5V	Steady State	T_A = 25°C T_A = 70°C	I_D	6.3 5.0	A
Continuous Drain Current (Note 5) V_{GS} = 4.5V	t ≤ 10s	T_A = 25°C T_A = 70°C	I_D	9.3 7.4	A
Pulsed Drain Current (Note 6)			I_{DM}	50	A

Maximum Ratings – P-CHANNEL, Q2 @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-35	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 4) V_{GS} = -10V	Steady State	T_A = 25°C T_A = 70°C	I_D	-5.0 -3.8	A
Continuous Drain Current (Note 5) V_{GS} = -10V	Steady State	T_A = 25°C T_A = 70°C	I_D	-7.8 -6.2	A
Continuous Drain Current (Note 5) V_{GS} = -10V	t ≤ 10s	T_A = 25°C T_A = 70°C	I_D	-12 -10	A
Continuous Drain Current (Note 5) V_{GS} = -4.5V	Steady State	T_A = 25°C T_A = 70°C	I_D	-6.5 -5.2	A
Continuous Drain Current (Note 5) V_{GS} = -4.5V	t ≤ 10s	T_A = 25°C T_A = 70°C	I_D	-9.6 -7.7	A
Pulsed Drain Current (Note 6)			I_{DM}	-50	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	1.54	W
Thermal Resistance, Junction to Ambient @T_A = 25°C (Note 4)	$R_{\theta JA}$	81.3	°C/W
Power Dissipation (Note 5)	P_D	4.1	W
Thermal Resistance, Junction to Ambient @T_A = 25°C (Note 5)	$R_{\theta JA}$	30.8	°C/W
Power Dissipation (Note 5) t ≤ 10s	P_D	8.9	W
Thermal Resistance, Junction to Ambient @T_A = 25°C (Note 5) t ≤ 10s	$R_{\theta JA}$	14	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 4. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
5. Device mounted on 2" x 2" FR-4 PCB with high coverage 2 oz. Copper, single sided.
6. Repetitive rating, pulse width limited by junction temperature.

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Electrical Characteristics – N-CHANNEL, Q1 @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	35	-	-	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current T_J = 25°C	I_{DSS}	-	-	1.0	µA	V_{DS} = 35V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	3.0	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	25 50	35 65	mΩ	V_{GS} = 10V, I_D = 8A V_{GS} = 4.5V, I_D = 6A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	4.5	-	S	V_{DS} = 10V, I_D = 8A
Diode Forward Voltage	V_{SD}	-	-	1.2	V	V_{GS} = 0V, I_S = 8A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	850	-	pF	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	64.7	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	51.9	-	pF	
Gate Resistance	R_g	-	1.6	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = 10V)	Q_g	-	18.7	-	nC	V_{GS} = 10V, V_{DS} = 28V, I_D = 8A
Total Gate Charge (V_{GS} = 4.5V)	Q_g	-	8.8	-		V_{GS} = 4.5V, V_{DS} = 28V, I_D = 8A
Gate-Source Charge	Q_{gs}	-	2.6	-		
Gate-Drain Charge	Q_{gd}	-	2.1	-		
Turn-On Delay Time	$t_{D(on)}$	-	5.4	-	ns	V_{DS} = 18V, V_{GS} = 10V, R_L = 18Ω, R_G = 3.3Ω, I_D = 1A
Turn-On Rise Time	t_r	-	2.8	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	33.2	-	ns	
Turn-Off Fall Time	t_f	-	35.6	-	ns	

Electrical Characteristics – P-CHANNEL, Q2 @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	-35	-	-	V	V_{GS} = 0V, I_D = -250µA
Zero Gate Voltage Drain Current T_J = 25°C	I_{DSS}	-	-	-1.0	µA	V_{DS} = -35V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	-	-3.0	V	V_{DS} = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	30 40	45 65	mΩ	V_{GS} = -10V, I_D = -6A V_{GS} = -4.5V, I_D = -4A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	8	-	S	V_{DS} = -10V, I_D = -6A
Diode Forward Voltage	V_{SD}		-	-1.2	V	V_{GS} = 0V, I_S = -6A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	985.2	-	pF	V_{DS} = -25V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	90.6	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	75.3	-	pF	
Gate Resistance	R_g	-	7.0	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = -10V)	Q_g	-	19.2	-	nC	V_{GS} = -10V, V_{DS} = -28V, I_D = -6A
Total Gate Charge (V_{GS} = -4.5V)	Q_g	-	9.5	-		V_{GS} = -4.5V, V_{DS} = -28V, I_D = -6A
Gate-Source Charge	Q_{gs}	-	2.0	-		
Gate-Drain Charge	Q_{gd}	-	3.5	-		
Turn-On Delay Time	$t_{D(on)}$	-	5.2	-	ns	V_{DS} = -18V, V_{GS} = -10V, R_L = 18Ω, R_G = 3.3Ω, I_D = -1A
Turn-On Rise Time	t_r	-	4.8	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	45.8	-	ns	
Turn-Off Fall Time	t_f	-	29.5	-	ns	

Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.

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N-CHANNEL, Q1

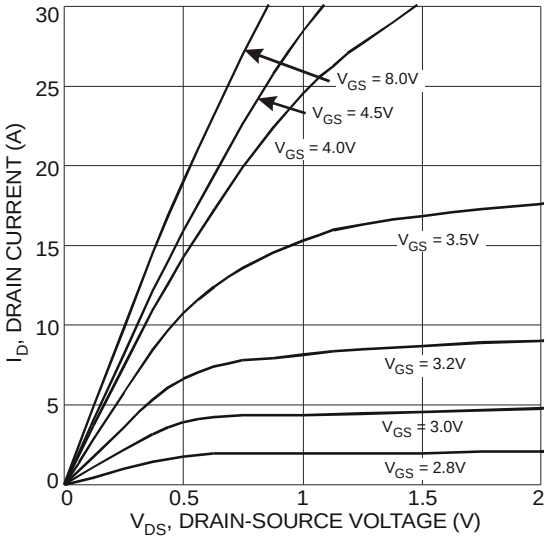

Fig. 1 Typical Output Characteristic

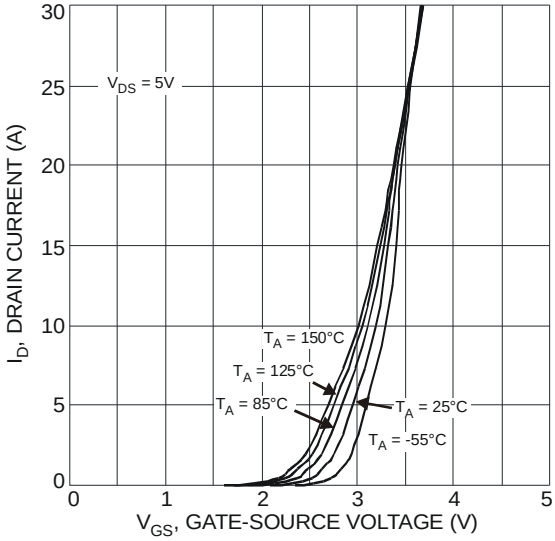

Fig. 2 Typical Transfer Characteristic

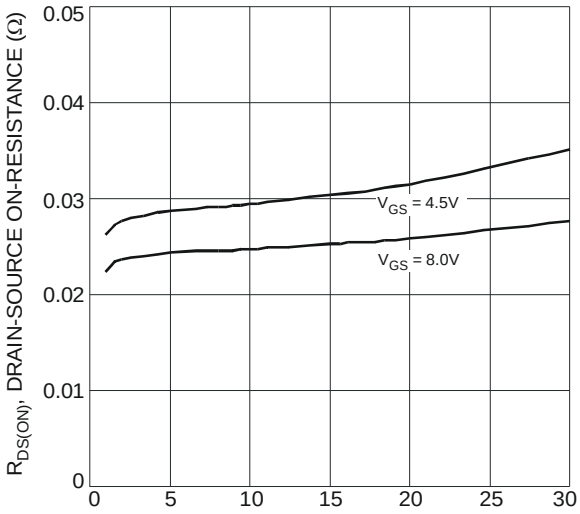

Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

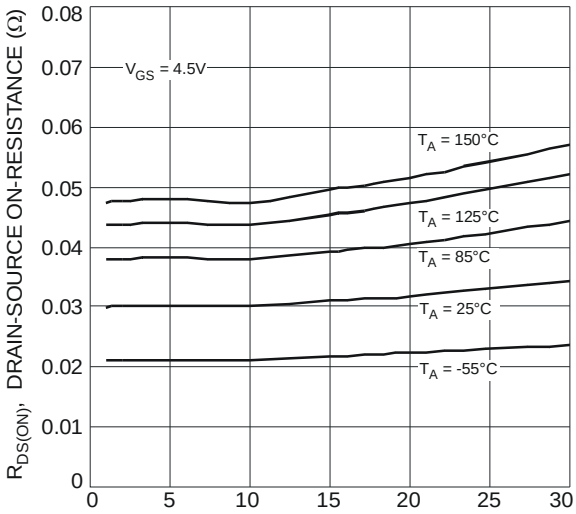

Fig. 4 Typical On-Resistance
vs. Drain Current and Temperature

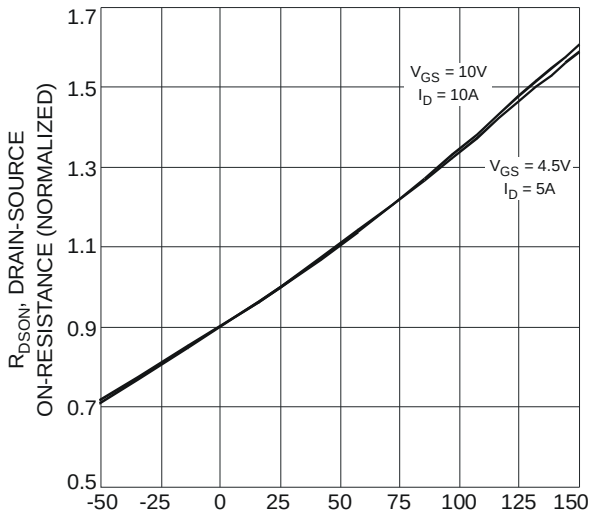

Fig. 5 On-Resistance Variation with Temperature

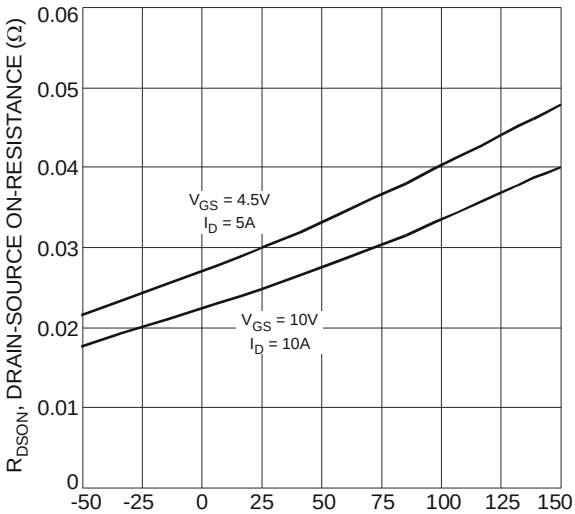

Fig. 6 On-Resistance Variation with Temperature

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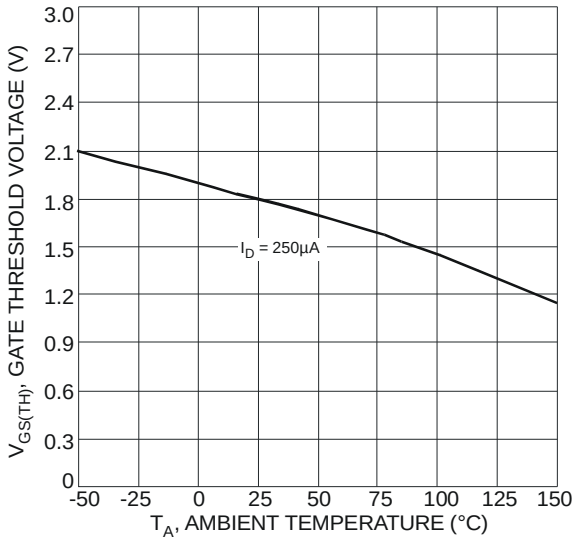

Fig. 7 Gate Threshold Variation vs. Ambient Temperature

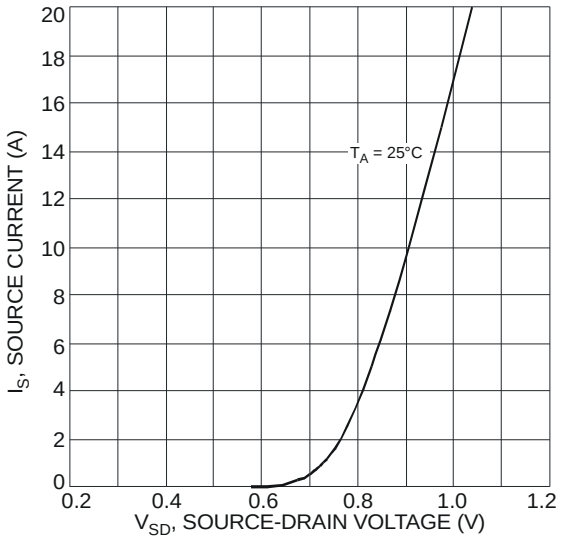

Fig. 8 Diode Forward Voltage vs. Current

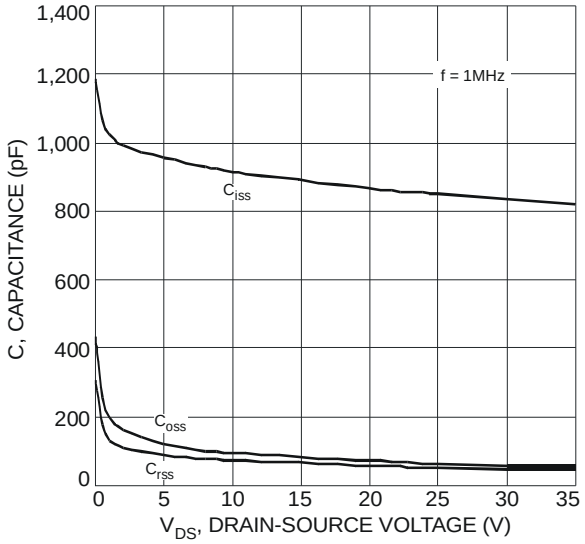

Fig. 9 Typical Total Capacitance

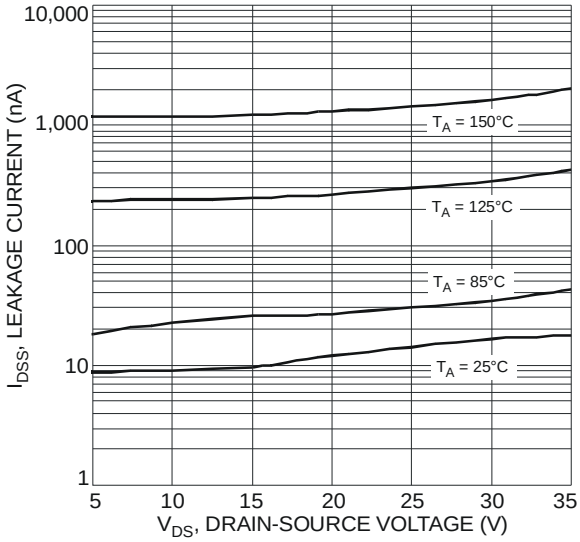

Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

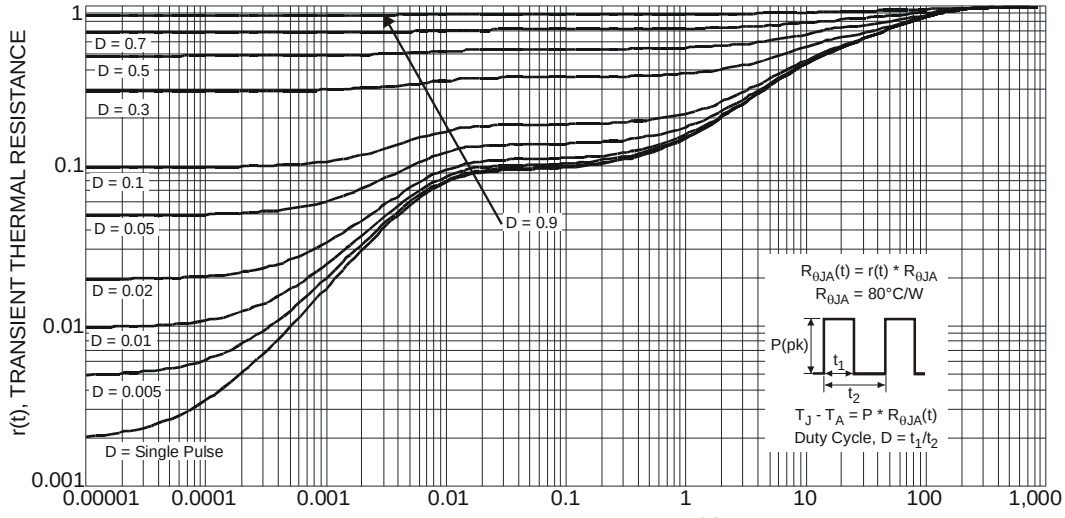

Fig. 11 Transient Thermal Response

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P-CHANNEL, Q2

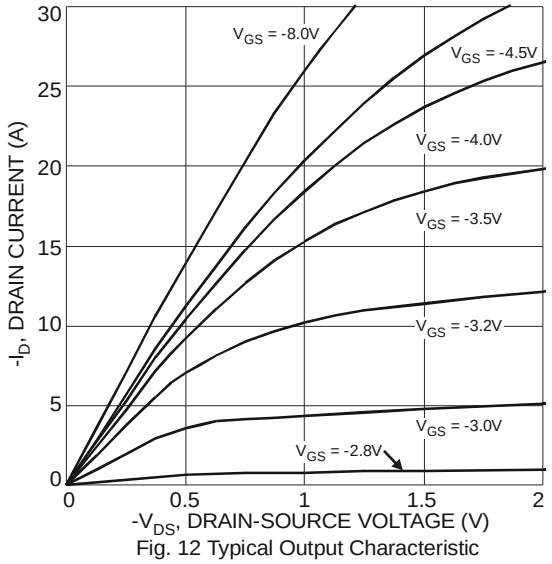

Fig. 12 Typical Output Characteristic

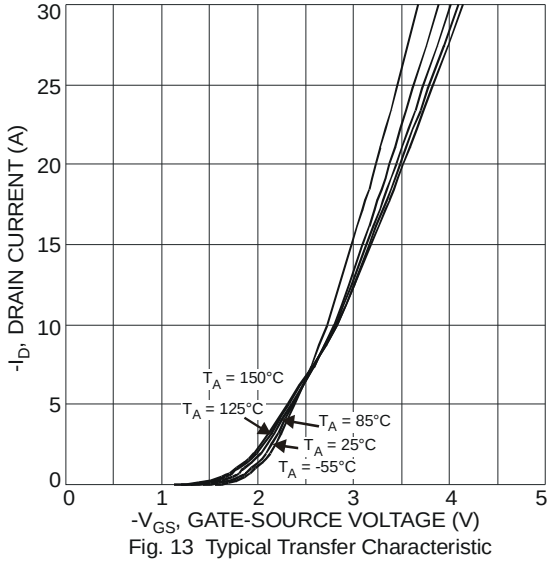

Fig. 13 Typical Transfer Characteristic

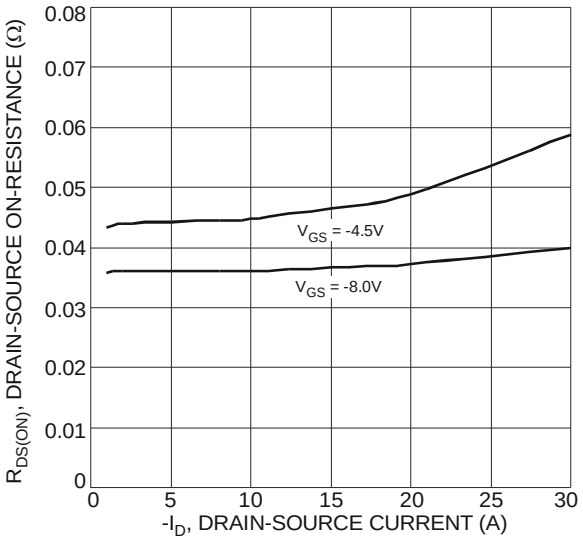

Fig. 14 Typical On-Resistance
vs. Drain Current and Gate Voltage

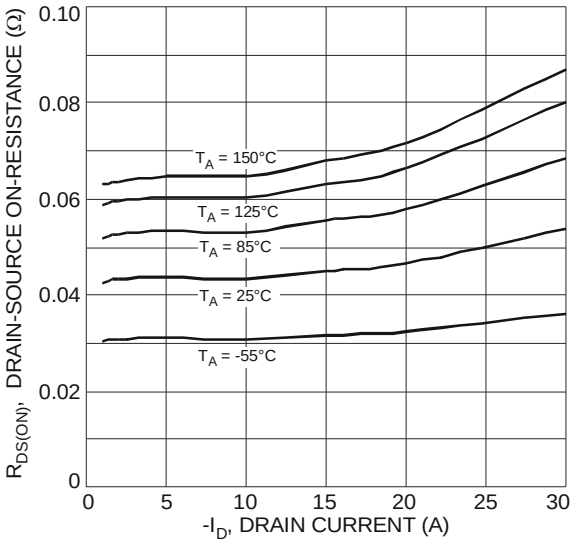

Fig. 15 Typical On-Resistance
vs. Drain Current and Temperature

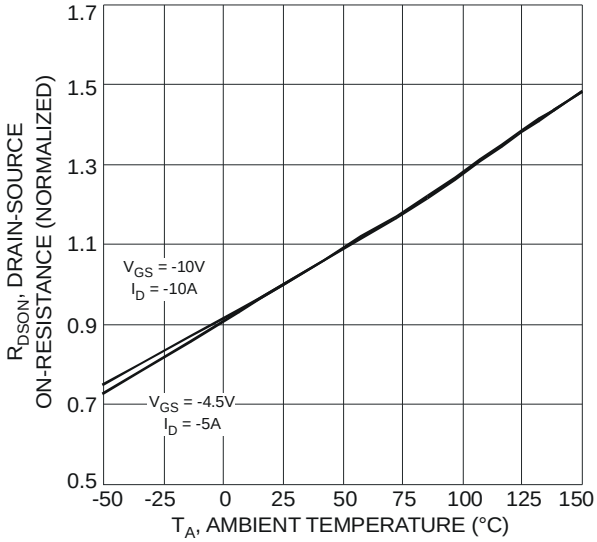

Fig. 16 On-Resistance Variation with Temperature

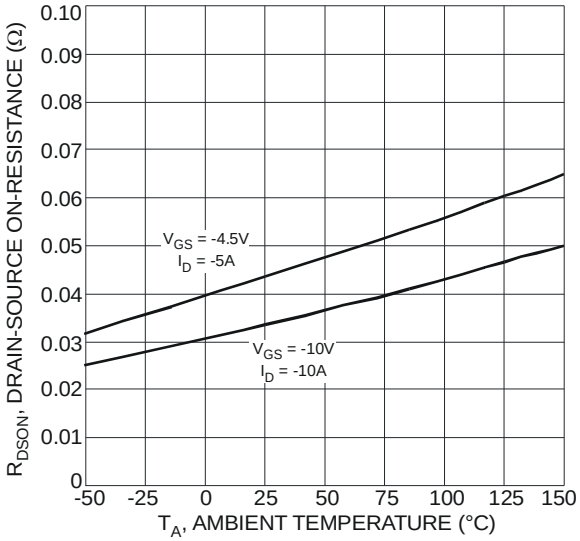

Fig. 17 On-Resistance Variation with Temperature

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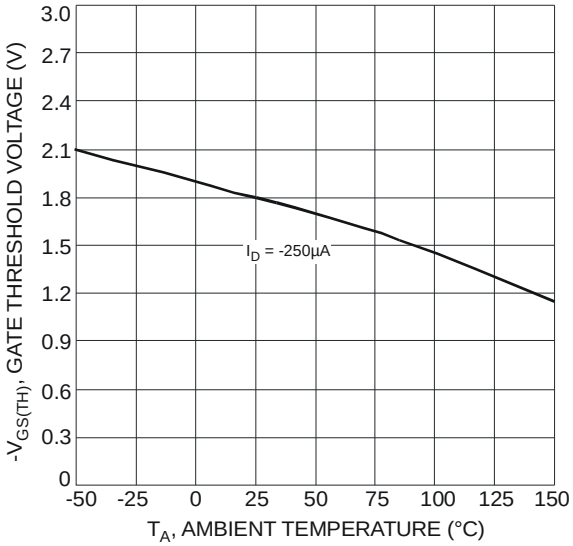

Fig. 18 Gate Threshold Variation vs. Ambient Temperature

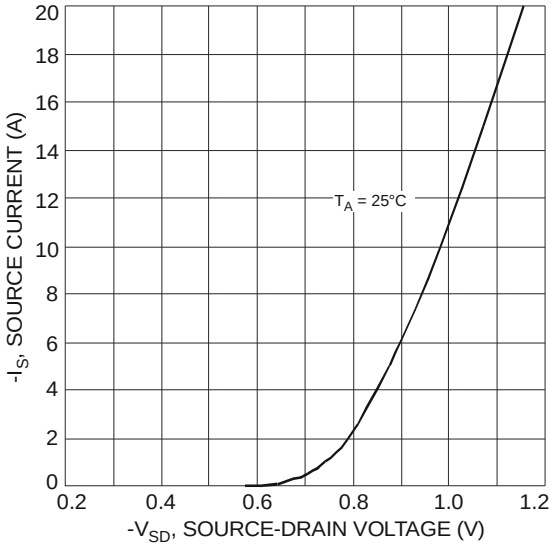

Fig. 19 Diode Forward Voltage vs. Current

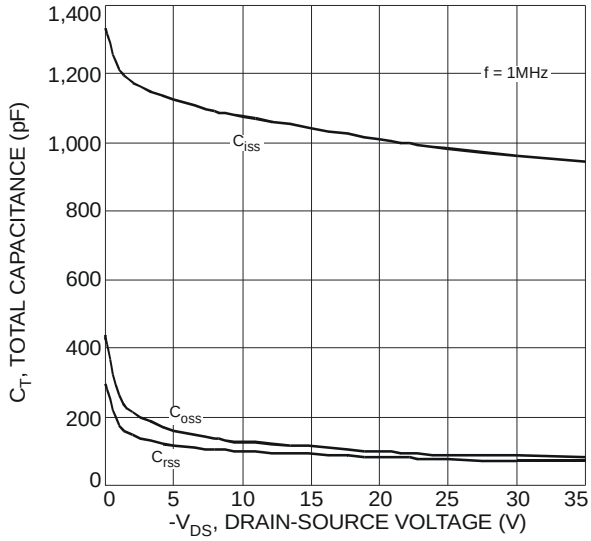

Fig. 20 Typical Total Capacitance

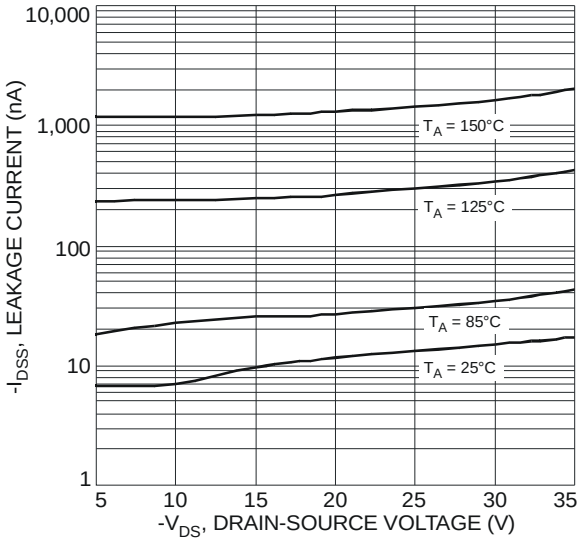

Fig. 21 Typical Leakage Current vs. Drain-Source Voltage

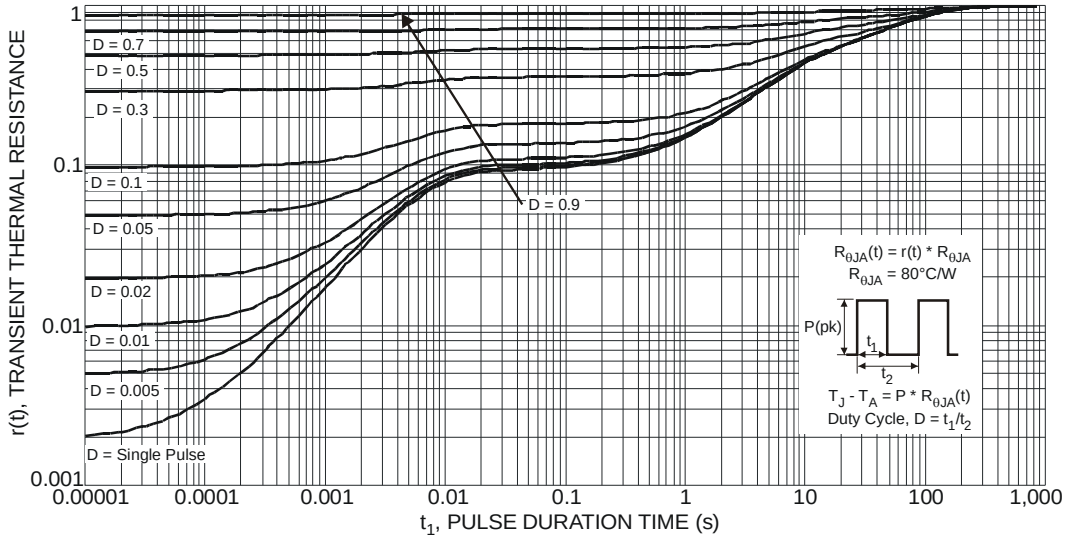

Fig. 22 Transient Thermal Response

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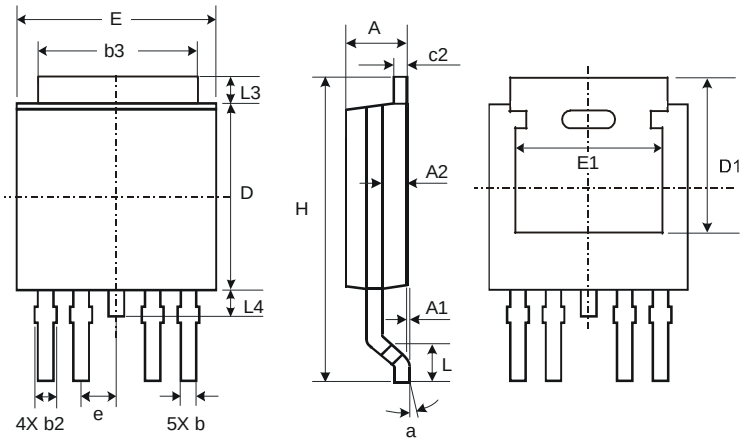
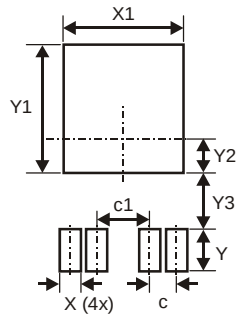
Package Outline Dimensions



TO252-4L			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.51	0.71	0.583
b2	0.61	0.79	0.70
b3	5.21	5.46	5.33
c2	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	–	–
e	–	–	1.27
E	6.45	6.70	6.58
E1	4.32	–	–
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	–
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
c	1.27
c1	2.54
X	1.00
X1	5.73
Y	2.00
Y1	6.17
Y2	1.64
Y3	2.66

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