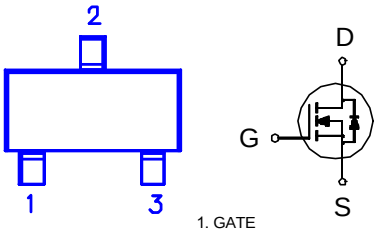
AO3413

N-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
20	50.8mΩ	3A



SOT-23

1. GATE
2. DRAIN
3. SOURCE

ABSOLUTE MAXIMUM RATINGS (T_C = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±16	V
Continuous Drain Current	T_C = 25 °C	I_D	3	A
	T_C = 100 °C		2	
Pulsed Drain Current[1]		I_{DM}	20	
Power Dissipation	T_C = 25 °C	P_D	0.6	W
	T_C = 100 °C		0.5	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C
Lead Temperature ($^1/_{16}$" from case for 10 sec.)		T_L	275	

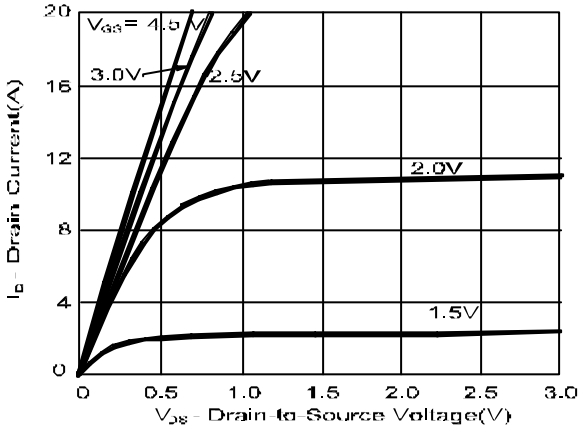
ELECTRICAL CHARACTERISTICS (T_C = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250µA	20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	0.45	0.75	1.2	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±16V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V			1	µA
		V_{DS} = 16V, V_{GS} = 0V, T_J = 125 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 10V, V_{GS} = 4.5V	6			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 2.5V, I_D = 1.5A		60	100	mΩ
		V_{GS} = 4.5V, I_D = 3A		42	50.8	

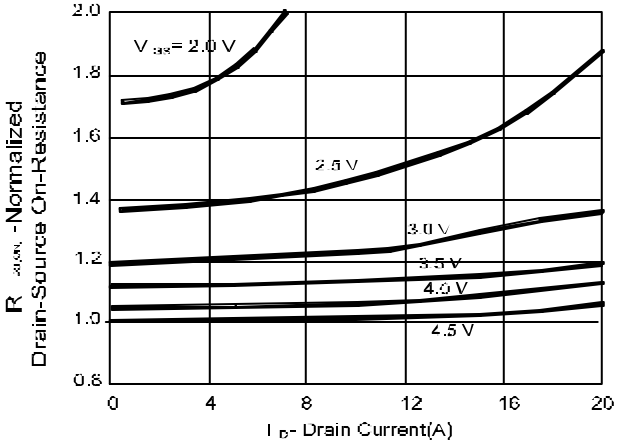
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		450		pF
Output Capacitance	C_{oss}			100		
Reverse Transfer Capacitance	C_{rss}			60		
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 4.5V, I_D = 3A		12	25	nC
Gate-Source Charge[2]	Q_{gs}			3		
Gate-Drain Charge[2]	Q_{gd}			4.5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 10V, R_L = 1Ω, I_D ≅ 1A, V_{GEN} = 4.5V, R_{GS} = 0.2Ω		6	12	nS
Rise Time[2]	t_r			5	10	
Turn-Off Delay Time[2]	$t_{d(off)}$			16	40	
Fall Time[2]	t_f			5	20	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				2.3	A
Pulsed Current[3]	I_{SM}				4.6	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0V			1.3	V

[1]Pulse test : Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature.

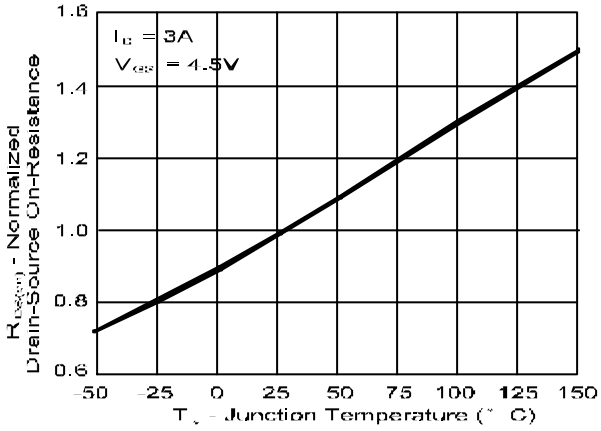
On-Region characteristics



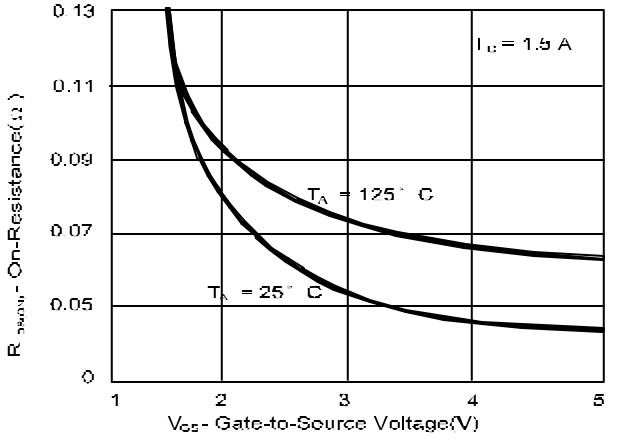
On-Resistance Variation with Drain Current and Gate Voltage



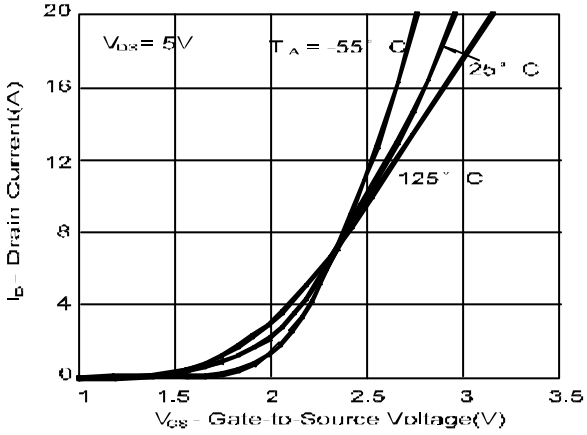
On-Resistance Variation with Temperature



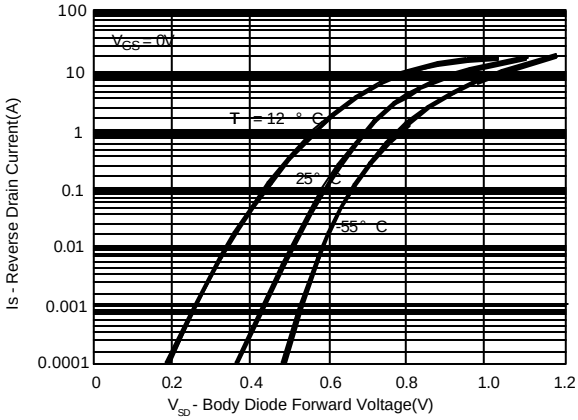
On-Resistance Variation with Gate-to-Source Voltage



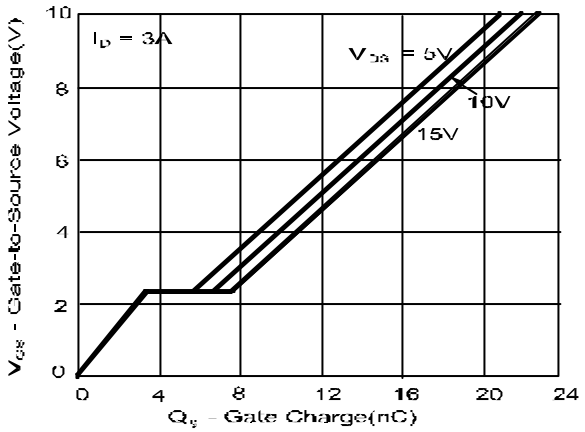
Transfer Characteristics



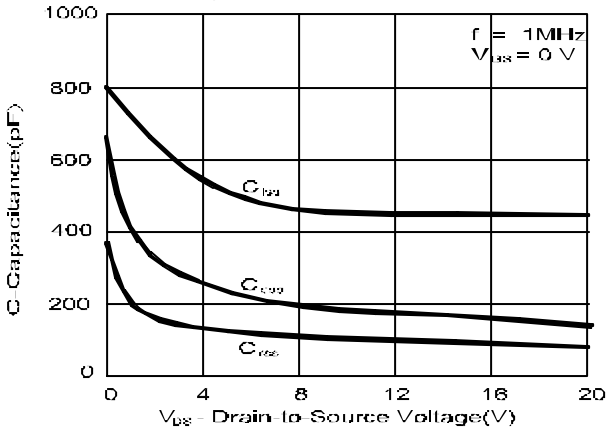
Body Diode Forward Voltage Variation with Source Current and Temperature



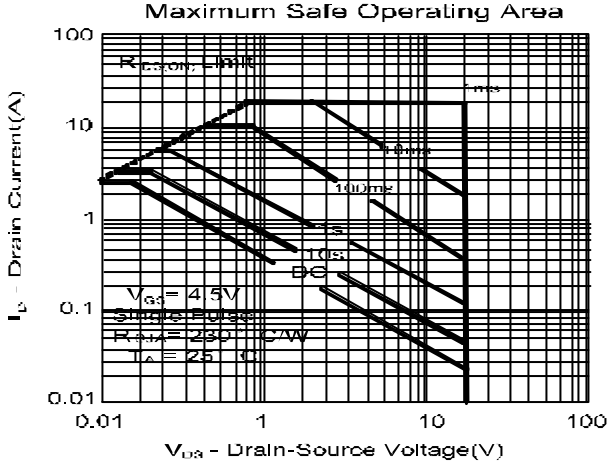
Gate Charge Characteristics



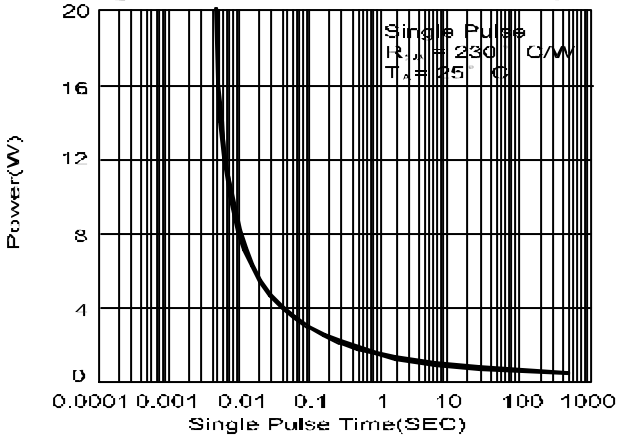
Capacitance Characteristics



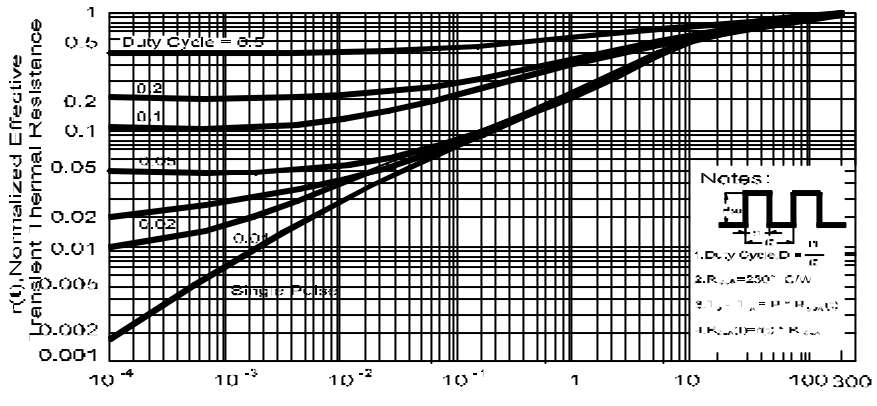
Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



SOT-23 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.85		1.15	H	0.1	0.15	0.25
B	2.4		3	I	0.37		
C	1.4	1.6	1.8	J			
D	2.7	2.9	3.1	K			
E	1	1.1	1.3	L			
F	0		0.1	M			
G	0.35		0.5	N