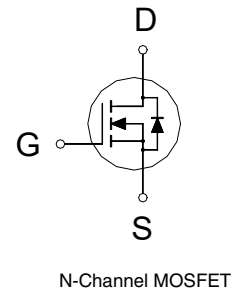
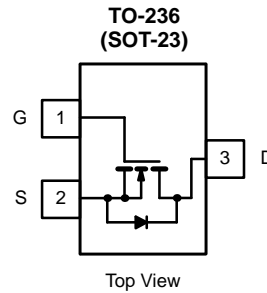


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	30V
$R_{DS(on) (MAX.)}$	28m Ω
I_D	5.8A



Pb-Free Lead Plating & Halogen Free

MARKING
0030S23

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_A = 25\text{ }^\circ\text{C}$	I_D	5.8	A
Pulsed Drain Current ¹		I_{DM}	20	
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	P_D	1.4	W
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Ambient	$R_{\theta JA}$		89	$^\circ\text{C} / \text{W}$

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1		3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24V, V_{GS} = 0V$			1	μA
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5V, V_{GS} = 10V$	5.8			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 3.5A$		23	28	m Ω
		$V_{GS} = 4.5V, I_D = 4A$		27	40	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 5A$		15		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$		485.8		pF
Output Capacitance	C_{oss}			65.2		
Reverse Transfer Capacitance	C_{rss}			54		
Total Gate Charge ^{1,2}	Q_g	$V_{DS} = 15V, V_{GS} = 10V,$ $I_D = 5A$		12.6		nC
Gate-Source Charge ^{1,2}	Q_{gs}			1.9		
Gate-Drain Charge ^{1,2}	Q_{gd}			2.6		
Turn-On Delay Time ^{1,2}	$t_{d(on)}$	$V_{DS} = 15V,$ $V_{GS} = 10V, R_{GS} = 3\Omega$		5		nS
Rise Time ^{1,2}	t_r			3		
Turn-Off Delay Time ^{1,2}	$t_{d(off)}$			15		
Fall Time ^{1,2}	t_f			3.5		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$)						
Continuous Current	I_S				5.8	A
Pulsed Current ³	I_{SM}				14	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$			1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

TYPICAL CHARACTERISTICS

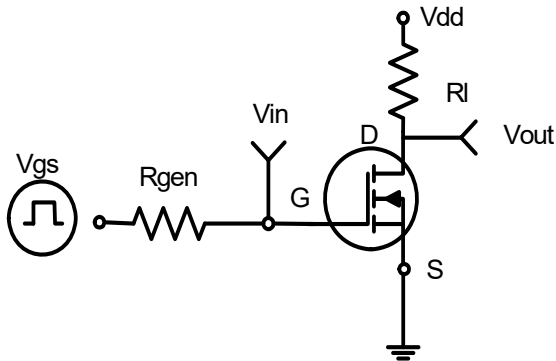


Figure 1: Switching Test Circuit

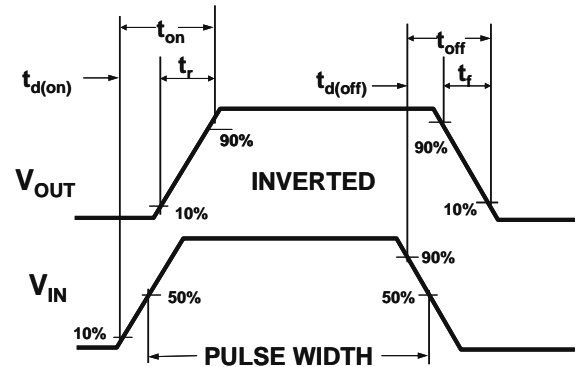


Figure 2: Switching Waveforms

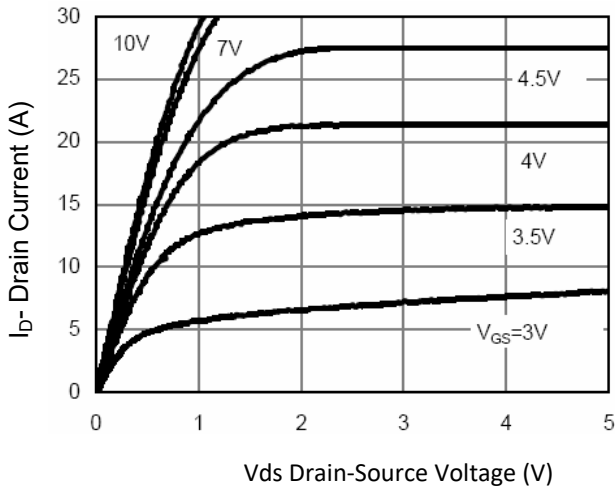


Figure 3 Output Characteristics

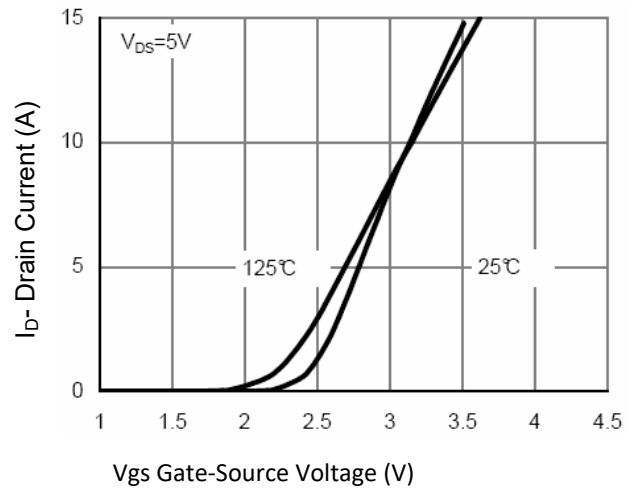


Figure 4 Transfer Characteristics

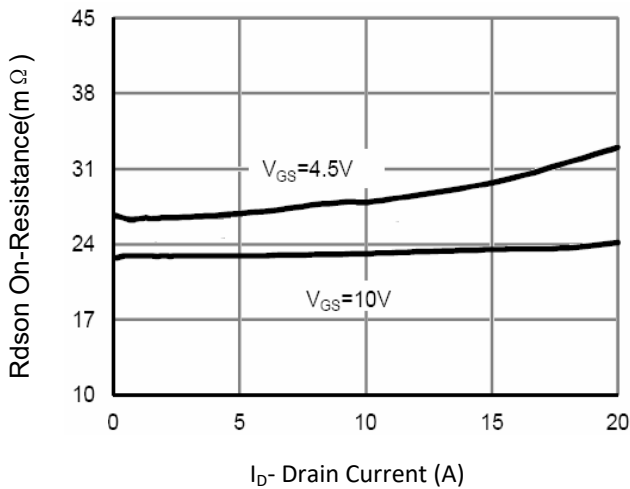


Figure 5 Drain-Source On-Resistance

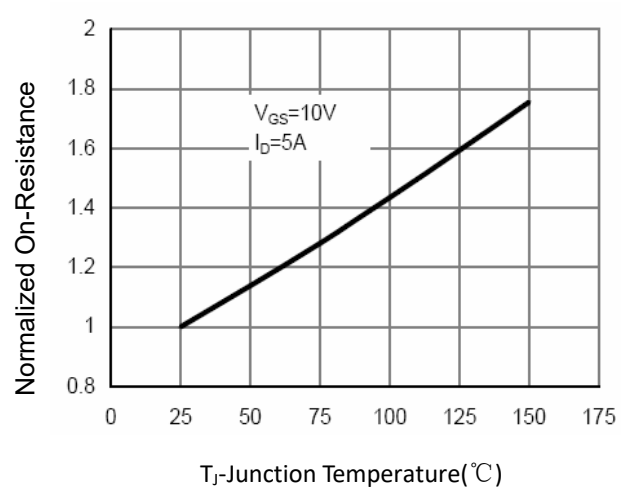


Figure 6 Drain-Source On-Resistance

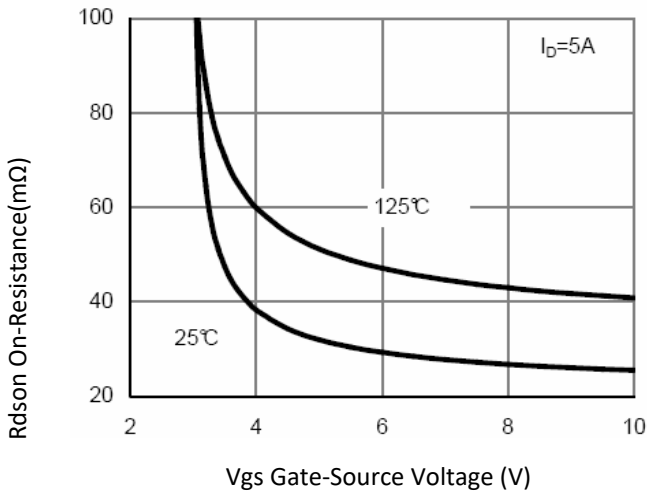


Figure 7 Rdson vs Vgs

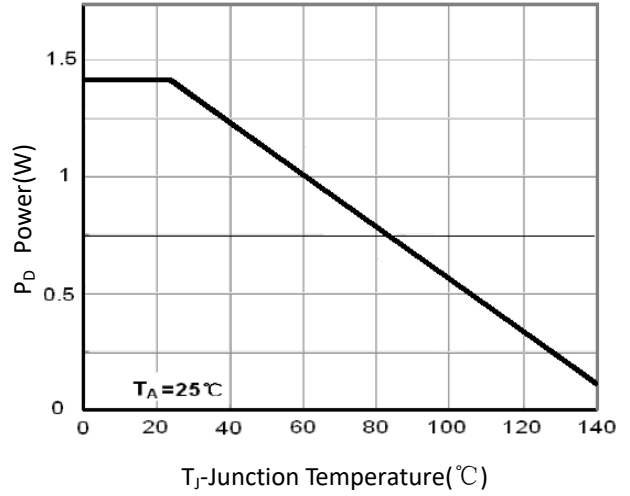


Figure 8 Power Dissipation

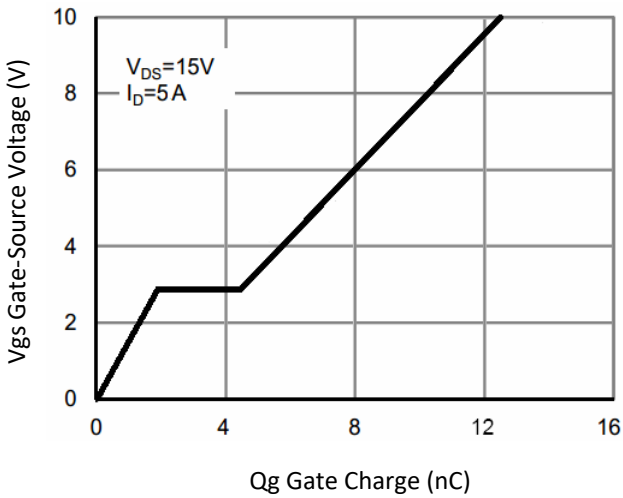


Figure 9 Gate Charge

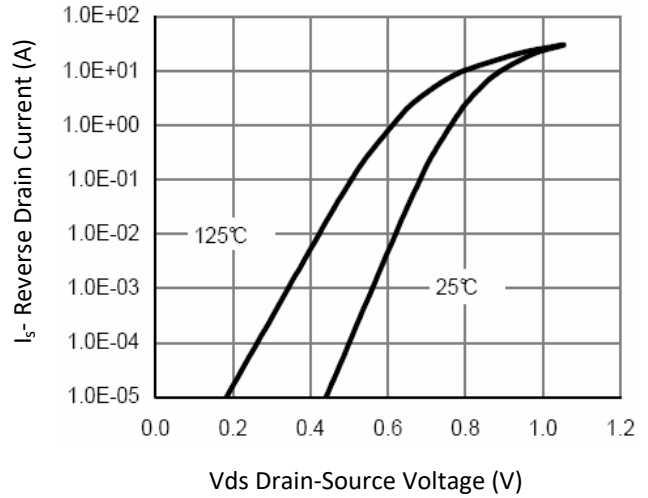


Figure 10 Source- Drain Diode Forward

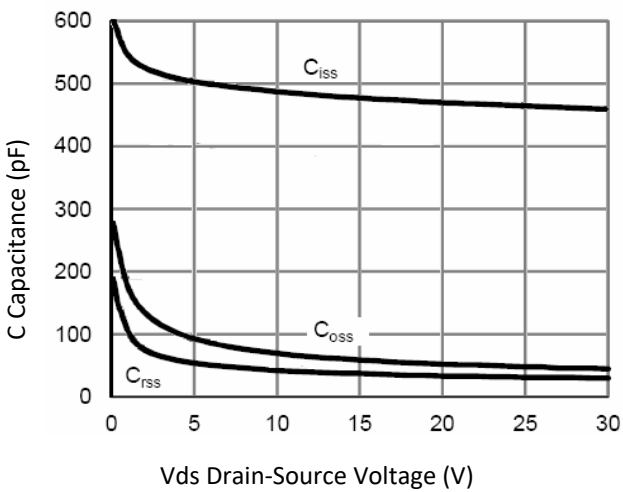


Figure 11 Capacitance vs Vds

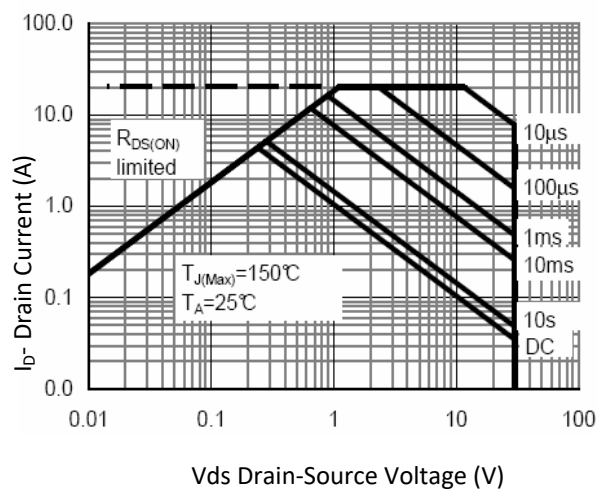


Figure 12 Safe Operation Area

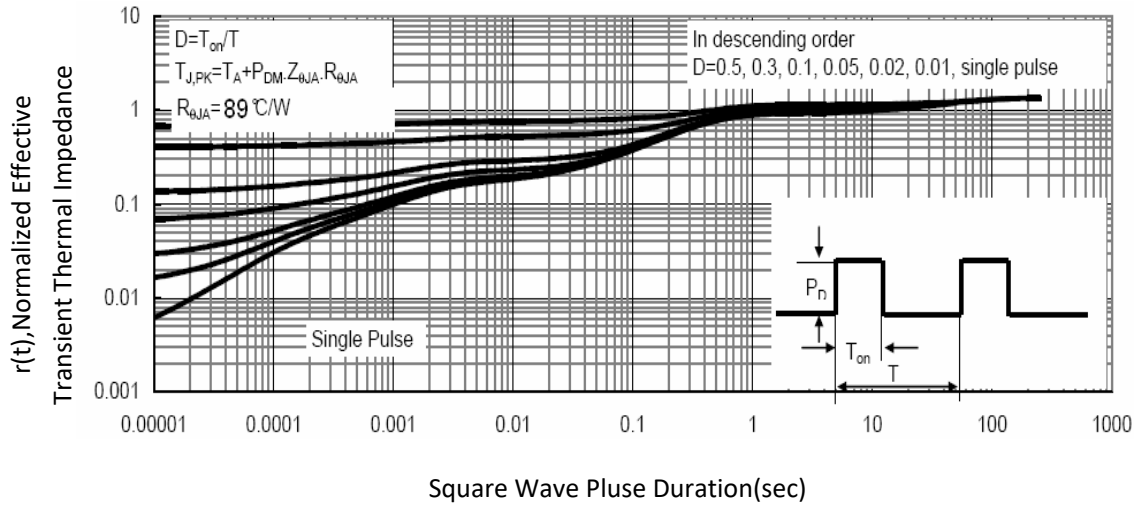


Figure 13 Normalized Maximum Transient Thermal Impedance