

FEATURES

- | High Density Cell Design For Low $R_{DS(On)}$
- | Voltage Controlled Small Signal Switch
- | Rugged and Reliable
- | High Saturation Current Capability
- | ESD Protected

APPLICATION

- | Direct logic-level interface: TTL/CMOS
- | Drivers: relays, solenoids, lamps
- | hammers, display, memories, etc.
- | Battery operated systems
- | Solid-state relays

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

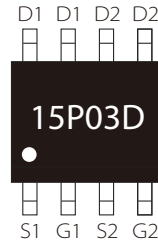
ABSOLUTE MAXIMUM RATINGS($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Conditions	Value	Unit
Drain-Source Voltage	V_{DS}	$T_A=25^{\circ}\text{C}$	-30	V
Gate-Source Voltage	V_{GS}	$T_A=25^{\circ}\text{C}$	± 20	V
Drain Current (DC)	I_D^*	$T_A=25^{\circ}\text{C}, V_{GS}=-10\text{V}$	-10	A
		$T_A=100^{\circ}\text{C}, V_{GS}=-10\text{V}$	-5.5	A
Drain Current (Pulsed)	I_{DM}^{***}	$T_A=25^{\circ}\text{C}, V_{GS}=-10\text{V}$	-34	V
Total Power Dissipation	P_{tot}^*	$T_A=25^{\circ}\text{C}$	2.2	W
Storage Temperature	T_{STG}		-55 to 150	$^{\circ}\text{C}$
Junction Temperature	T_J		150	$^{\circ}\text{C}$
Diode Forward Current	I_S	$T_C=25^{\circ}\text{C}$	-10	A
Junction and Storage Temperature	$R_{\theta JA}^*$		56.3	$^{\circ}\text{C}/\text{W}$

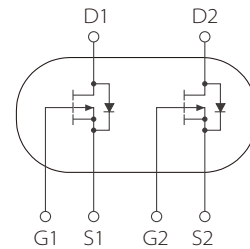
Notes: * Surface Mounted on 1 in² pad area, $t \leq 10$ sec
 ** Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
 *** limited by bonding wire



SOP-8



Marking



Schematic Symbol

ELECTRICAL CHARACTERISTICS(T_a=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=-250\mu A$	-30			V
Drain Leakage Current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$			-1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1		-2	V
On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=-10V, I_D=-5A$		14.5	18	m Ω
		$V_{GS}=-4.5V, I_D=-3A$		23.5	28	
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$V_{GS}=0V, I_{SD}=-5A$			-1.3	V
Reverse Recovery Time	t_{rr}	$I_{SD} = -5A, dI_{SD}/dt = 100 A/\mu s$		12		ns
Reverse Recovery Charge	Q_{rr}			6.2		nC
Dynamic Characteristics^b						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, F=1.0MHz$		1953		pF
Output Capacitance	C_{oss}			175		
Reverse Transfer Capacitance	C_{rss}			146		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-15V, R_L=3\Omega$ $V_{GEN}=-10V, R_G=3.9\Omega, I_{DS}=-5 A$		5.7		ns
Turn-On Rise Time	t_r			15		
Turn-Off Delay Time	$t_{d(off)}$			117		
Turn-Off Fall Time	t_f			40		
Gate Charge Characteristics^b						
Total Gate Charge	Q_g	$V_{GS}=-10V, V_{DS}=-15V, I_{DS}=-5A$		33		nC
Gate Source Charge	Q_{gs}			8.4		
Gate Drain Charge	Q_{gd}			3.7		

Notes: a : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

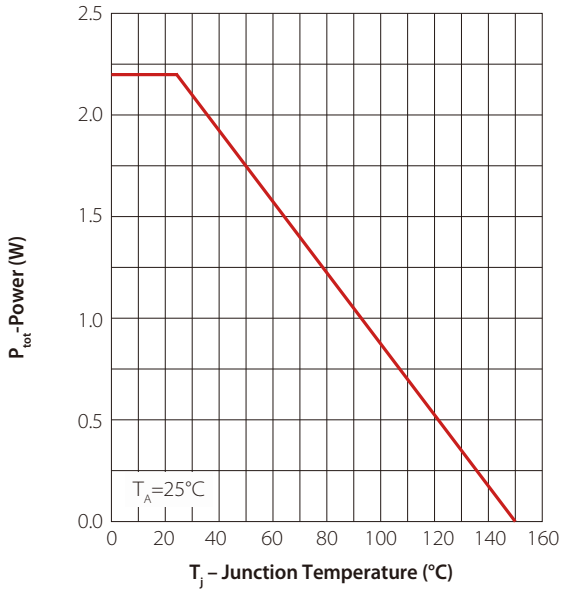


Figure2: Current Capability

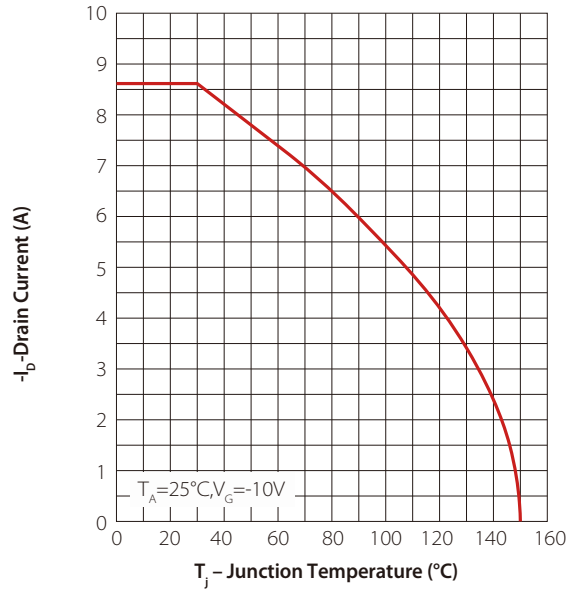


Figure3: Safe Operation Area

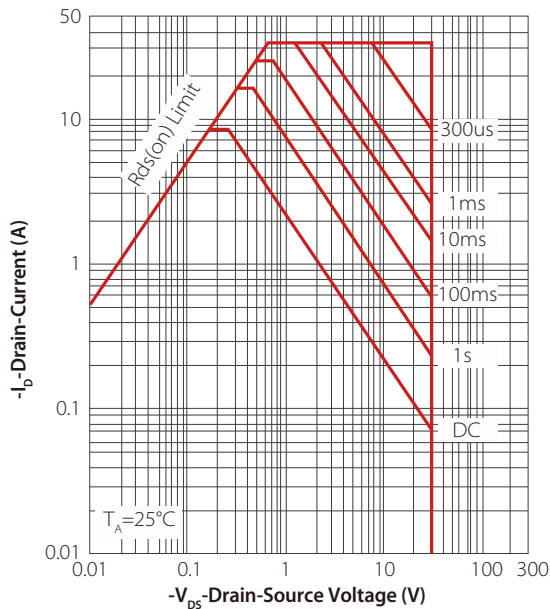


Figure 4: Transient Thermal Impedance

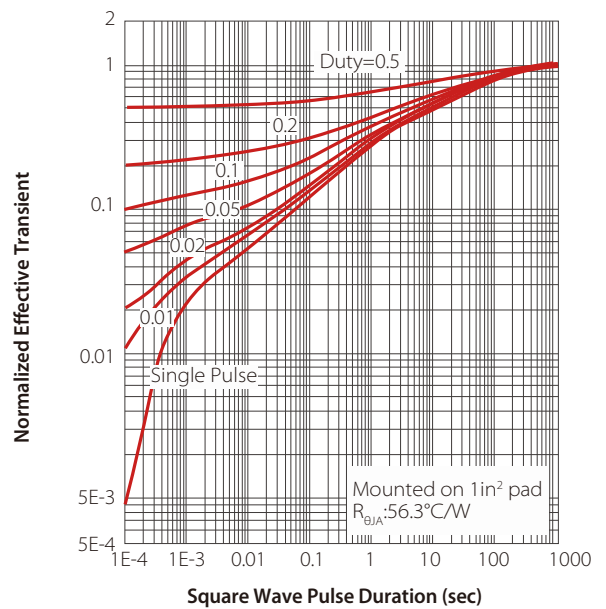


Figure 5: Output Characteristics

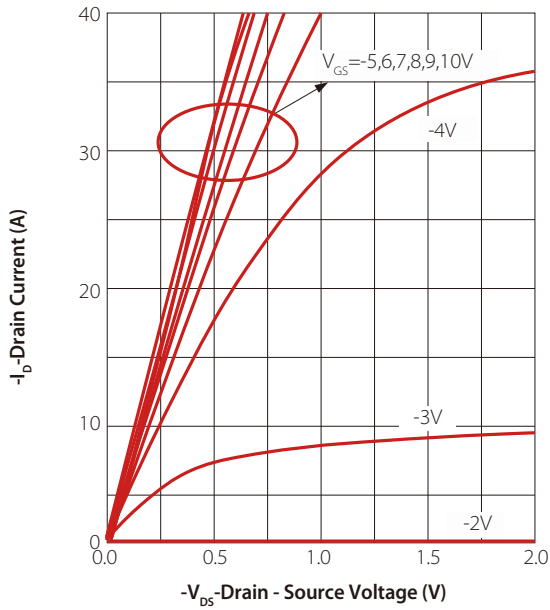


Figure 6: Drain-Source On Resistance

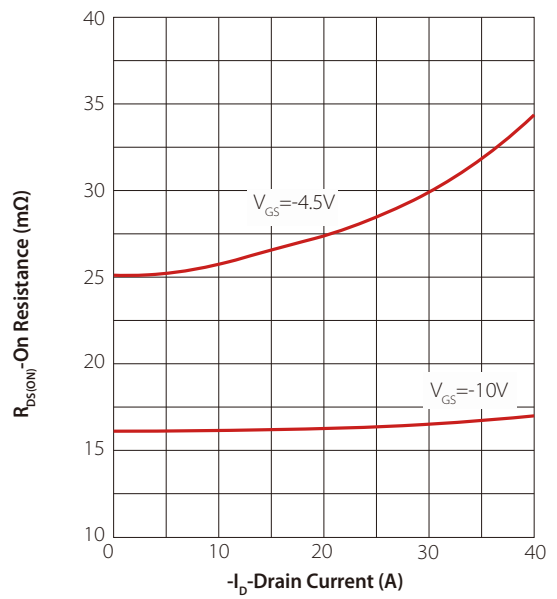


Figure 7: Transfer Characteristics

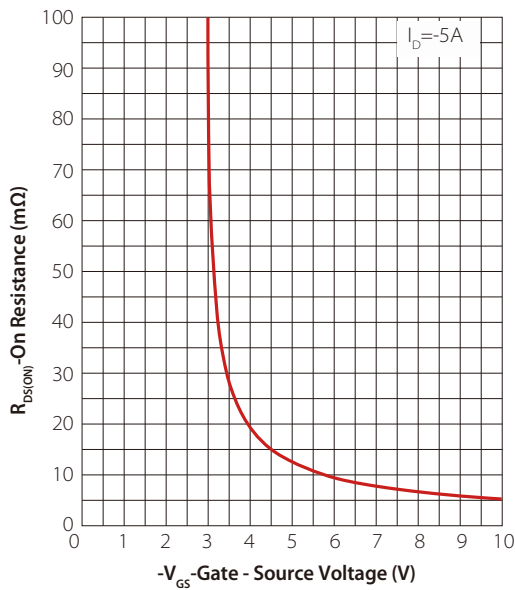


Figure 8: Gate Threshold Voltage

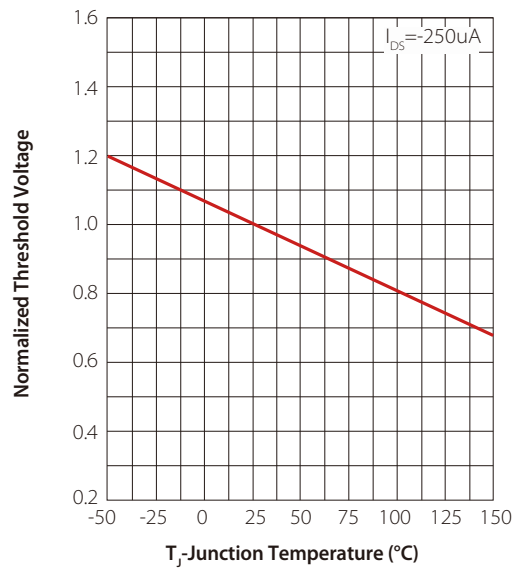


Figure 9: Normalized On Resistance

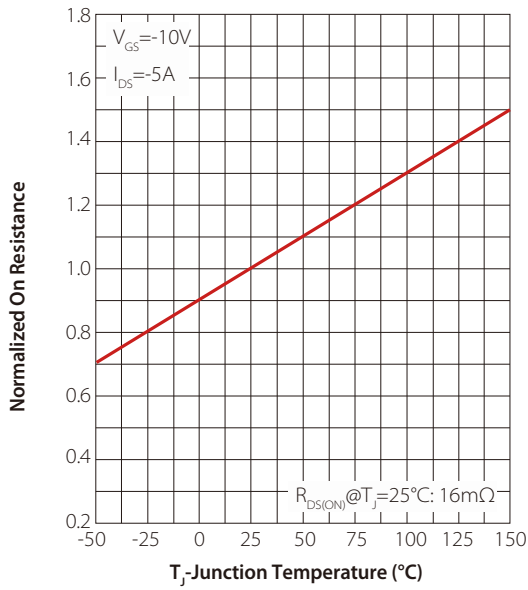


Figure 10: Diode Forward Current

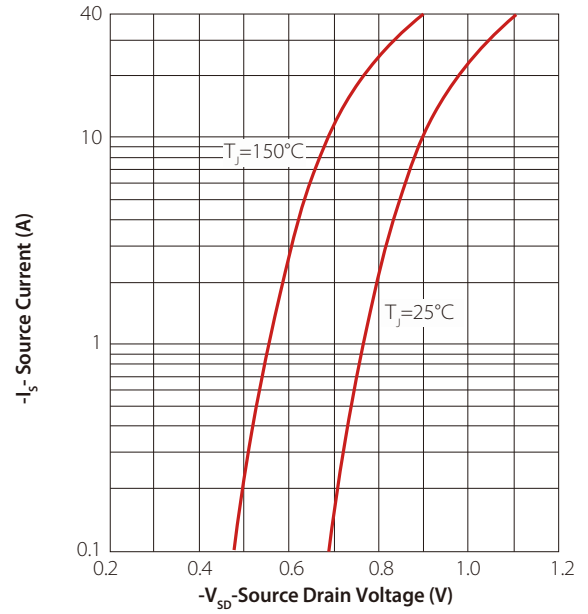


Figure 11: Capacitance

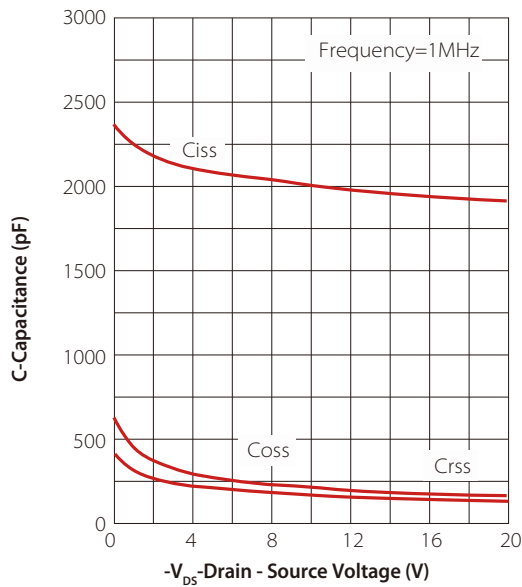
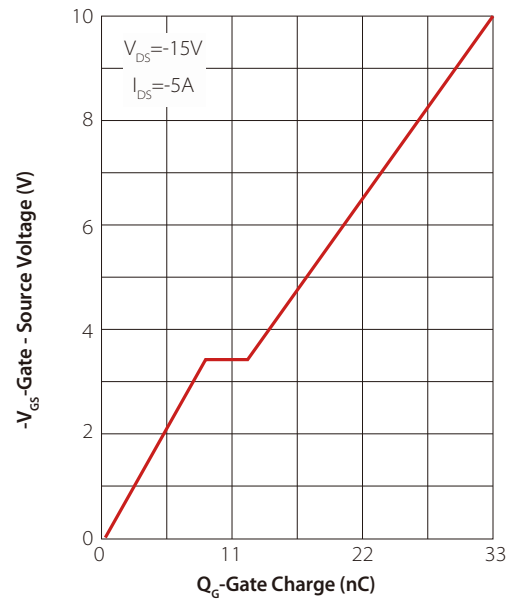
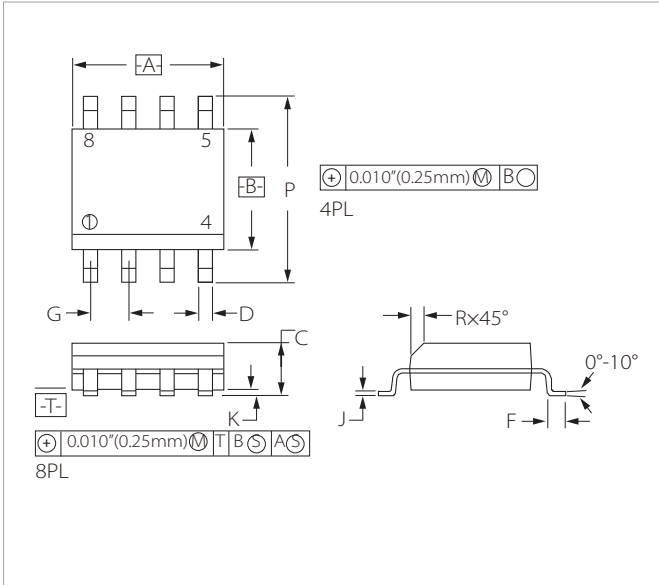


Figure 12: Gate Charge

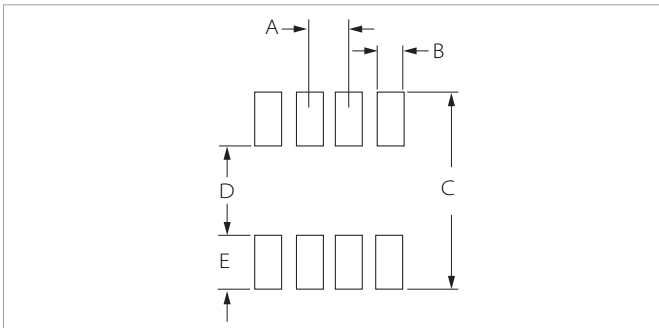


SOP-8 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27BSC		0.050BSC	
J	0.18	0.25	0.007	0.009
K	0.10	0.25	0.004	0.008
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min	Max	Min	Max
A	1.14	1.40	0.045	0.055
B	0.64	0.89	0.025	0.035
C	6.22	-	0.245	-
D	3.94	4.17	0.155	0.165
E	1.02	1.27	0.040	0.050

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPPM8P10N03	SOP-8	3000PCS	13"

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