



PRODUCT SUMMARY

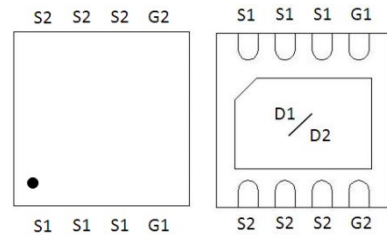
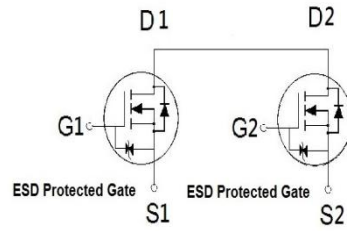
$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
20V	6m Ω	55A

Features

- Patent Pending.
- Pb-Free, Halogen Free and RoHS compliant.
- Low $R_{DS(on)}$ to Minimize Conduction Losses.
- Ohmic Region Good $R_{DS(on)}$ Ratio.
- Optimized Gate Charge to Minimize Switching Losses.
- Products Integrated ESD diode with ESD Protected up to 2KV.

Applications

- Protection Circuits Applications.
- Portable Devices for Battery PACK Applications.



G : GATE
D : DRAIN
S : SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 10	V
Continuous Drain Current ²	$T_C = 25^\circ\text{C}$	I_D	55	A
	$T_C = 100^\circ\text{C}$		35	
	$T_A = 25^\circ\text{C}$		19	
	$T_A = 70^\circ\text{C}$		15	
Pulsed Drain Current ¹		I_{DM}	100	
Avalanche Current		I_{AS}	32	
Avalanche Energy	L = 0.1mH	E_{AS}	51	mJ
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	31	W
	$T_C = 100^\circ\text{C}$		12.5	
	$T_A = 25^\circ\text{C}$		3.6	
	$T_A = 70^\circ\text{C}$		2.3	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient ³	$R_{\theta JA}$		35	$^\circ\text{C}/\text{W}$
Junction-to-case	$R_{\theta JC}$		4	

¹Pulse width limited by maximum junction temperature.

²Package limitation current is 18A.

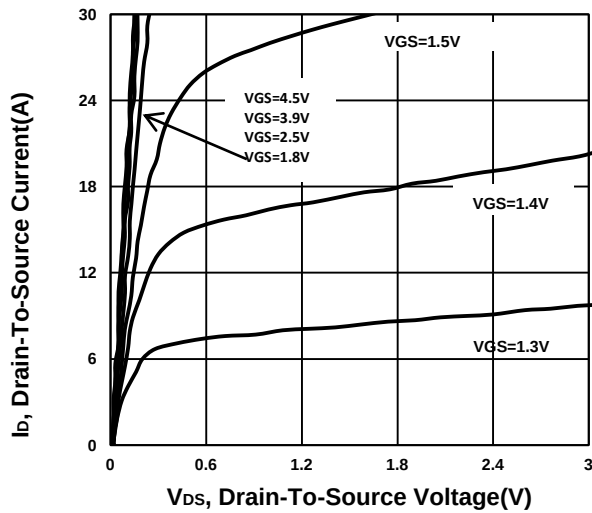
³The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

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

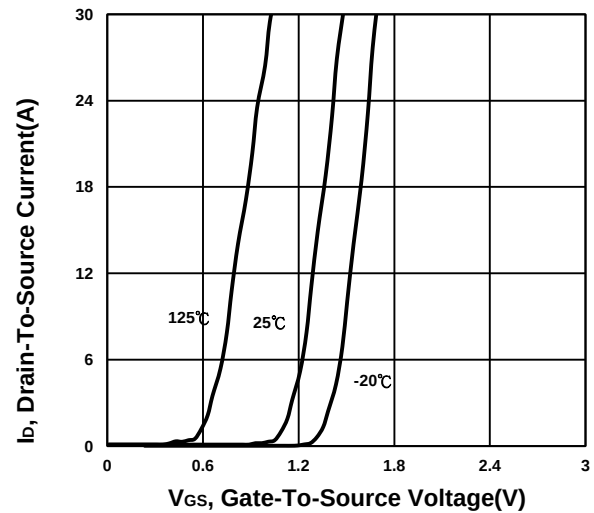
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.4	0.7	1	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 16V, V_{GS} = 0V$			1	μA
		$V_{DS} = 10V, V_{GS} = 0V, T_J = 125\text{ }^{\circ}C$			10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 3A$	3.5	5	6	m Ω
		$V_{GS} = 3.8V, I_D = 3A$	3.7	5.2	7.2	
		$V_{GS} = 3.1V, I_D = 3A$	4	5.6	7.8	
		$V_{GS} = 2.5V, I_D = 3A$	4.3	5.8	8	
		$V_{GS} = 1.8V, I_D = 3A$	5	8.7	12	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 3A$		43		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 10V, f = 1MHz$		2111		pF
Output Capacitance	C_{oss}			320		
Reverse Transfer Capacitance	C_{rss}			282		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		1.7		Ω
Total Gate Charge ²	$Q_{g(V_{GS}=4.5V)}$	$V_{DS} = 10V, I_D = 3A$		29		nC
	$Q_{g(V_{GS}=3.9V)}$			25.5		
Gate-Source Charge ²	Q_{gs}			2.5		
Gate-Drain Charge ²	Q_{gd}			7.3		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = 15V$ $I_D \cong 3A, V_{GEN} = 4.5V, R_G = 6\Omega$		20		nS
Rise Time ²	t_r			40		
Turn-Off Delay Time ²	$t_{d(off)}$			72		
Fall Time ²	t_f			18		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25\text{ }^{\circ}C$)						
Continuous Current ³	I_S				25.8	A
Forward Voltage ¹	V_{SD}	$I_F = 3A, V_{GS} = 0V$			1.2	V
Reverse Recovery Time	t_{rr}	$I_F = 3A, dI_F/dt = 100A / \mu S$		21		nS
Reverse Recovery Charge	Q_{rr}			8		nC

¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.²Independent of operating temperature.³Package limitation current is 18A.

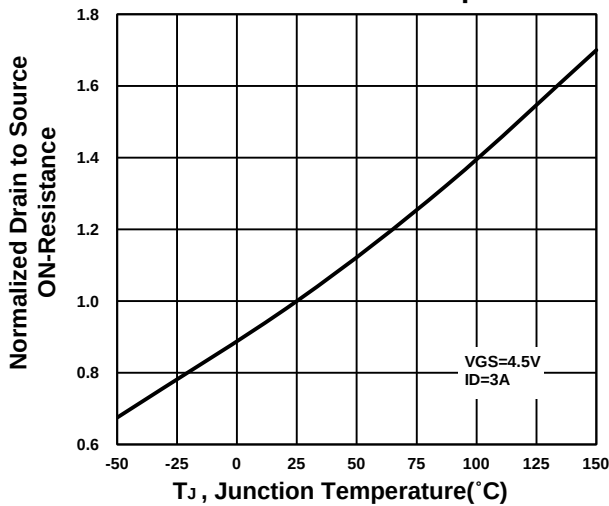
Output Characteristics



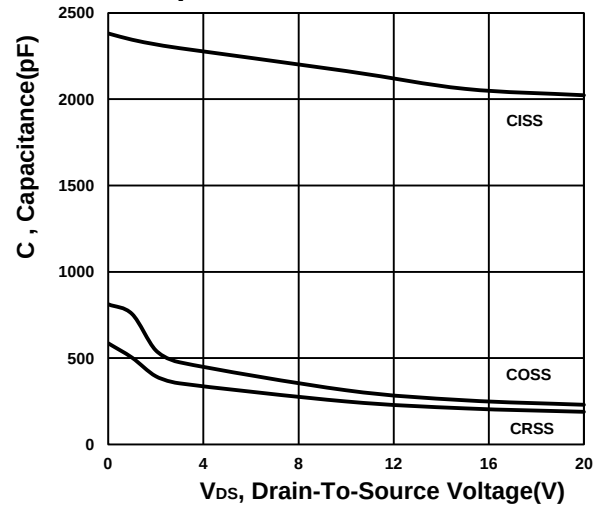
Transfer Characteristics



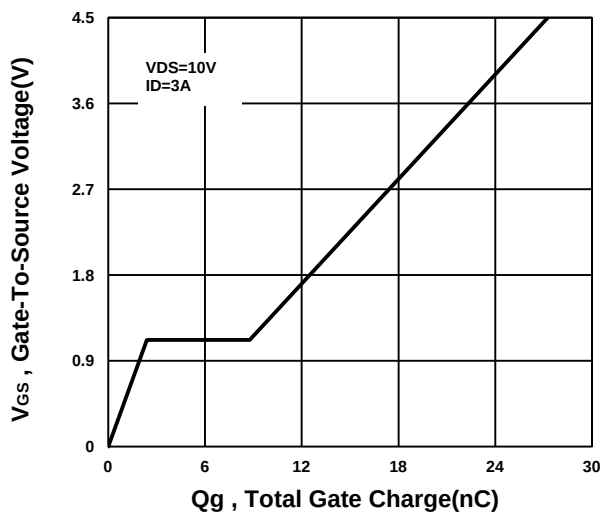
On-Resistance VS Temperature



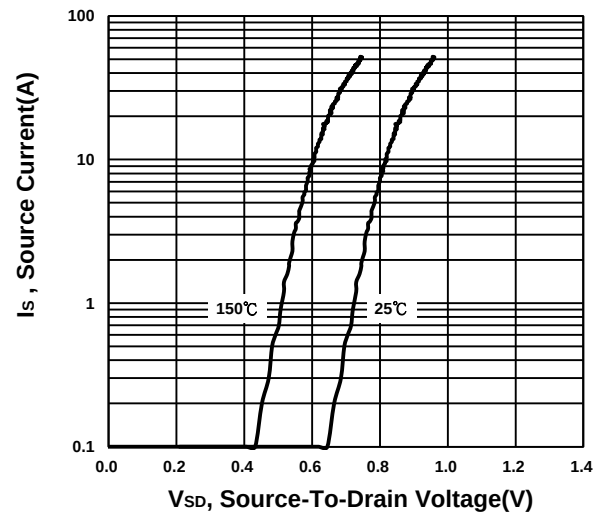
Capacitance Characteristic



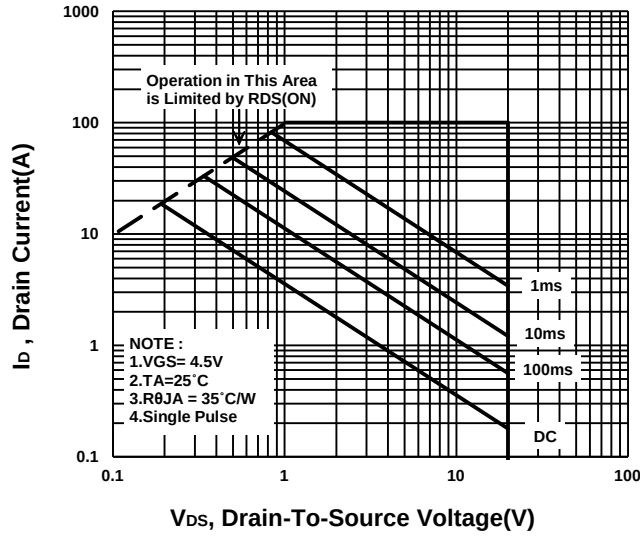
Gate charge Characteristics



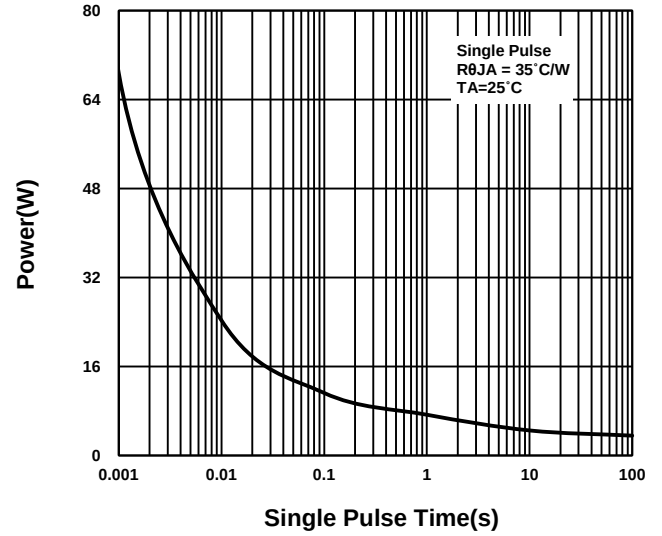
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

